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## Original Contributions.

AN ORIGINAL SYSTEM OF TIGHTENING LOOSE LOWER  
INCISORS AND CUSPIDS, EMBRACING A METHOD  
OF SECURING SUBSTITUTES WITHOUT  
CLASPS OR PLATES, WHEN THESE TEETH  
ARE MISSING; TOGETHER WITH A  
DISCUSSION OF THE QUESTION  
OF PULP DEVITALIZATION—  
WHEN AND HOW—IN  
SOUND TEETH.

By D. D. SMITH, D.D.S., PHILADELPHIA. READ BEFORE THE NEW YORK  
ODONTOLOGICAL SOCIETY, FEB. 18, 1902; ALSO BEFORE THE CINCINNATI  
ODONTOLOGICAL SOCIETY, MARCH 19, 1902.

The subject matter of this paper is the outgrowth of many and varied attempts to relieve a class of patients who in considerable numbers are the helpless subjects of destructive agencies, the work of which is most marked in connection with the lower incisors. The almost universal presence of irritants on the lingual surfaces of the roots of these teeth, causing absorption of the alveolar tissue and consequent loosening of the teeth, is due first, to ignorance, inattention and neglect on the part of the patient; and secondly, to the insufficiency of present methods in dental practice.

However unfortunate and humiliating it may be for the profession, it must nevertheless be admitted that a true statement regarding existing conditions would reveal the fact that it is not neglect alone on the part of the dentist, but that dentistry itself, as now understood and practiced, is wholly incompetent to cope with the progressive absorption found in connection with these teeth. Hence the destructive process goes on to loosening, and from loosening to entire loss of the teeth.

If there are those who apprehend the true cause of these untoward conditions, no treatment worthy of note has yet been made known

as preventive; little or nothing creditable has been done in the way of relief, and we fail to note a suggestion even looking to cure. The trend of dental thought has been so conservatively directed in the past, and the importance of pulp conservation has been so unduly magnified, that we have overlooked important means for the permanent preservation of these teeth, and we have failed entirely in devices and appliances, easily available for relief, when permitted the use of teeth deprived of living pulps. The crude mechanical attempts which have been made with strings and wire in an effort to stay this loosening have contributed greatly to the general infection of the mouth, and served to hasten the inevitable issue.

It is the purpose of this paper to present for your consideration a system for the permanent tightening of loose lower front teeth; a system which is equally applicable for inserting artificial substitutes on the lower jaw, where front teeth only are missing. I have chosen the term system rather than process in this connection because each case requires a regularly formulated plan, and because there are special operations and special mechanical processes, so connected and interwoven as to make one complex whole.

The inception of this system is one of the results of breaking away years ago from the commonly accepted teachings regarding the dental pulp. I am free to say no man can apprehend the highest service in practice until much of the past and present teaching respecting the offices of the dental pulp are overthrown, and the pulp itself is made to appear not as on masquerade, but in its true character, performing its work as a *part* of the vital forces of the tooth.

While it is not my purpose to surreptitiously advocate the wholesale destruction of dental pulps without cause, it should here be stated that this system of tightening loose teeth *requires* the destruction of normal pulps in strong, sound well developed teeth.

I hope to make plain a good and sufficient reason for lifting the ban of conservatism off such teeth as we may desire to use in this operation. If permitted to extend the discussion into other fields I should include such other pulps as we may know to be playing a mischievous part in the work of pyorrhea, and others that through misdirected activity in nutrition are helping to reduce the vascularity of the cemental tissue on the roots of many good strong teeth, thus hastening through absorption their permanent separation from

the alveolus. I should also unqualifiedly recommend pulp removal before filling in all cases of true pulp exposure. Indeed, I should take that rational view of a tooth which separates it into two parts—a crown and a root, each with its own independent source of life and nutrition; the crown-life supplied wholly by the pulp, from its chamber within the body of the tooth; the root-life supplied wholly from tissues and vessels in communication with the pericemental membrane, external to the root. I regard the crown-life, when once the tooth is erupted and consolidation of enamel and dentin is completed, as neither sacred nor inviolate; it may cease, as it frequently does in the course of nature, or it may be determined by external violence, without palpable injury to either the texture or function of the tooth. Pericemental or root life, on the contrary, I would impress as the *all important* life. Root life is sacred and should never be encroached upon in violence, to do this is to endanger the tooth.

It may seem a radical statement, but I am impelled to say that to hold to the estimate ultraconservatism places upon the dental pulp in the fully developed tooth is to fail to appreciate, and consequently fail to utilize many opportunities for service and usefulness in dental practice. As the destruction and removal of pulps from sound teeth are the basis of this system of tightening and inserting, any discussion of it to be complete must include means and methods for pulp devitalization, as well as the surgical aftertreatment of the roots. The latter is a matter of vital importance, involving the conservation of the cemental and pericemental life of the root, and as a consequence the stability, comfort, and permanency of all pulpless teeth.

Perhaps no subjects in the whole range of dental practice have been more prolific of discussion than those of pulp destruction and the aftertreatment of roots. Let us then study them with such care that no misinterpretation either of terms, means or methods shall result. Turning first to the living pulp, its work, as builder and nourisher of dentin (whether of root or crown) and of all enamel, is beyond dispute or question. The pulp is the only source of nutrition or sensation distributed to dentin or enamel in any part of the tooth; it also binds the dentin and enamel into sentient and nutritive agreement, through that vital force we call life.

Withdrawal or cessation of pulp-life from a tooth means complete cessation of nutritive function and sensation from all dentin and all enamel, as well as the complete loss of that vital force, uncompre-

hended but plainly manifest in a tooth with a living pulp. The effect of pulp destruction upon the enamel and dentin as tissues is inconsequential, if not in most cases imperceptible, but the crown as a coherent body is diminished in strength by it. This, however, is not a matter for serious consideration, as the sustaining strength of a natural crown is usually many times that of the strain ordinarily put upon it; very few pulpless teeth are broken or split by a force which a vital tooth in a similar state would sustain without injury. The destruction of a pulp in a young tooth, as in a patient 10 or 15 years of age, means, generally speaking, a retrograde metamorphosis for the osseous tissues of that crown, which may in the lapse of years materially weaken it, but its utility or efficiency is by no means impaired thereby.

Pulp destruction in more mature teeth, as at puberty, and from then to the verge of old age, exhibits little harmful effect, even upon the coherent strength of the crown. A tooth deprived of its pulp during this period, if properly treated, will perform all tooth-functions with the same fidelity, and often with greater comfort, than the tooth with a vital pulp. The harm that comes to the crown is slight, and not of a character to warrant any unfavorable prognosis.

Let us now inquire as to the root, that vital living part of the tooth, retaining and exercising all of its functions as when the pulp distributed sensation and nutrition to the dentin and enamel. It is my firm conviction, based on an extended experience, that there is not only no injury to the root in a wisely directed devitalization, but that there is often considerable gain. The permanent saving of a pulpless tooth rests upon the fact that there is a source of nutrition to the cementum, maintained independently of pulp action, and that this nutrition of the root is wholly unaffected by pulp destruction. The cementum, with its membrane the pericementum, is the most important tissue of the tooth for conservation; hence the peculiar emphasis attaching to the fact that physiologically the cementum receives its life and nutrition from a source wholly independent of the pulp and that it is unaffected by devitalization of pulp tissue. Articulation with alveolus, the most important of the tooth's relations, is unaltered and unaffected by pulp destruction, and cemental nutrition and absorption are not interfered with by it.

Pulp endowment to a tooth, in so far as it affects harmonious

union between root and alveolus, after tooth eruption, might be discarded without detriment; for the root portion of the tooth, in connection with its pericementum, is an independent vital organ, retaining and exercising function the same as when the pulp distributed nutrition and sensation to the dentin and enamel of the crown.

There are no necessary untoward cemental or pericemental symptoms, nor any change in the work of these tissues following the removal of the pulp, hence this operation, accompanied with proper disinfection of the tubules and of the intertubular matter, necessarily implies uninterrupted normal function of the tissues which furnish vital attachment between root and alveolus.

Pulpless teeth when properly treated are wholly comfortable—not weather indicators, not erratically subject to periodontitis, alveolar abscess, or other pathological conditions, but teeth with a favorable prognosis in all particulars.

Pulpless young teeth, that is, teeth which have lost their pulps before the vascularity of the cementum has been restricted by the contraction of its lacunæ and canaliculi through deposits in its substance, are far more subject to cemental accretions, or so-called exostosis, than the same teeth with living pulps. This is by no means an unfavorable condition, as through it the territory of normal circulation of cemental tissue is increased to the benefit of the tooth.

A noticeably frequent result of pulp destruction is a closer, firmer union of root and alveolus. This is probably due to two causes: first, an increased tendency to a deposit of cemental tissue on the surface of the root, and second, the entire obliteration of calcific deposits in cementum through pulp influence. A pulpless tooth which has never been the subject of pyorrhea alveolaris is practically if not entirely exempt from that trouble, and devitalization and removal of the pulp in the beginning of the disease is in individual instances attended with most satisfactory results.

Further, the value of a pulpless tooth should not be estimated from the condition of the natural crown, as it, with present methods for permanent crown restoration, is the least important part of the tooth. The root and its surroundings, that upon which the permanent comfort and retention of the tooth depends, should always form the basis of judgment and diagnosis. If the root portion of the tooth is firmly in vital union with the alveolus, and without pyorrhetic tendencies, the condition of the crown, whether much decayed

or broken, or even wholly gone, is not a matter affecting the possibilities of restoration in the smallest degree. A crown having the appearance of the natural tooth, and practically indestructible, can be supplied on any good root and on very many badly broken ones in any part of the mouth. The root which has an uninjured pericemental connection never questions whether the crown it is supporting is natural or artificial, but performs all the functions of a tooth with uncomplaining fidelity. We therefore conclude that the pulpless tooth with or without a crown is a living organ of the economy, and that it is to be esteemed and treated as such.

Thus we see that a true physiological differentiation of pulp and pericemental activities compels abandonment of many old and literally worn-out theories respecting pulp utility and pulp destruction, and the adoption of views and teachings which harmonize with common sense, physiological action and experience in practice. Finally, we may reckon ourselves well within the bounds of professional service when we study as I now propose,

*Methods of Pulp Destruction.*—A recent paper on this subject in the *Stomatologist* would be passed without comment, but that that journal is the organ of one of our larger colleges, and the article from the pen of one of its teachers. We thus judge that it fairly exhibits what students of dentistry of the present time are receiving on the important subject of pulp devitalization. We can but wonder if the general level of teaching in our modern schools is on a plane with the article referred to; if so, we think it must be admitted that the strictures of Dr. Wood, a professor in a medical school with a dental department, who publicly proclaimed that "the 'D.D.S.' is a badge of partial culture," are wholly just.

The author of the paper referred to, Dr. Inglis, says, "When the pulp is exposed and its extirpation is necessary there are several methods of preparing it for removal. These are briefly—devitalization by arsenic; benumbing by cocain, cataphoresis, or pressure anesthesia; and lastly, immediate removal by the shock of a wooden splint rapidly driven into the pulp." I have quoted all that is said in relation to the three methods in review, "the advantages and disadvantages of which he has sought to compare."

While much might be said of his teaching respecting "devitalization by arsenic and benumbing by cocain cataphoresis," what stamps

itself as most impressive in this article is "the *immediate removal* by the shock of a wooden splint rapidly driven into the pulp."

It would be entertaining if not instructive to know just when, how, and under what conditions this refined operation is to be performed. It would, I am sure, be instructive to know just how this method *removes* the pulp from the tooth. Then, too, recital of some personal experiences, together with statistics respecting the success of this operation, not forgetting definite instructions as to which end—the apical or crown—the wooden splint should be rapidly driven in at, would add to our present limited knowledge of the subject. To the uninitiated it would appear difficult, even when access to cavity is most favorable, to rapidly drive a wooden splint through the small pin-head opening usually found in the ordinary exposure to the very end of even a single-rooted tooth, not to mention the teeth known and unknown with bifurcated roots, and the known two and three-rooted teeth. We are informed further on in the article that "the shock of a tapering wood point rapidly driven into a pulp seems to cause but little pain if the operation is neatly done in a single-rooted tooth. A free exposure must be had so that the point may reach nearly to the apex."

If we are left somewhat in doubt in regard to the splint, we are fully informed respecting the arrest of hemorrhage, which the author says may be considerable from the apical arteries. "The most active agent for this purpose is a saturated solution of zinc chlorid in water (deliquesced zinc chlorid)." Imagine the effect upon a highly nervous organization—first, of driving a wooden splint into a living pulp, and then of the attempt to arrest an apical hemorrhage by the introduction of deliquesced zinc chlorid into a tooth-root, following the removal of a freshly devitalized pulp. Deliquesced zinc chlorid, one of the most highly irritating of dental medicaments, in no sense a styptic, introduced into a root immediately following pulp removal!

These quotations from this recent article are but samples of the incongruous absurdities put forth as the teachings of dentistry to-day, and that from professional sources.

It is not my purpose, even if I had the time, to discuss the so-called "instantaneous method of cocain benumbing, or devitalization under pressure," as it is not applicable in cases of sound teeth, such as we are generally required to deal with in connection with the system of tightening under consideration.

Hence we turn to devitalization by arsenic—the oldest, surest, most convenient and only strictly painless method yet known. Perhaps no agent in the dental pharmacopeia has been the subject of more false theories or of more unreasonable prejudice than arsenic as a devitalizer. Many attempts have been made to revise and improve the original formula, but nothing better nor more convenient of application has ever been produced than the old preparation of Dr. Spooner, sold under the name of "Nerve Paste." It consists of equal parts of arsenic and morph. acetate, made into a thick paste with creosote for convenience of handling. The morphin was introduced originally to counteract the pain excited by the application, but in reality it is only an excipient, its pain-reducing qualities not being appreciable. The action of creosote in a tooth is always good, and for that reason it should hold its place in the mixture, but the one active agent in the work of devitalization is the arsenic.

To attempt a review of the theories of its action, mischievous and otherwise, or to revive the opinions and prejudices which have appeared as teachings in relation to it in the last thirty years, would add little to our information, and nothing at all to the literature of the subject. My main purpose in dealing with it is to start an old, familiar remedy on a new and enlarged mission for the relief of suffering. To speak of arsenical devitalization as "the only strictly painless method yet made known," may sound strangely weird and altogether hypothetical to those who have endured hours of suffering induced by an arsenical application to highly sensitive, irritated or inflamed pulp tissue; nevertheless, there are methods of use for this agent which render it perfectly tractable and which fully justify the use of the expression, "strictly painless method."

And it is not only painless, but it is effective, certain. Dr. Inglis in the article alluded to continues to exploit the old idea that "there are patients of the type to resist arsenic," but teachings in harmony with the unhindered action of this substance in a tooth show the living tooth-pulp to be perfectly helpless in the presence of this irresistible destroyer of life. There are no conditions of the teeth which in any true sense are even suggestive of "patients of a type to resist arsenic." But some one may say, why such strong statements? "Have I not made applications of arsenic to pulps, causing intense suffering and yet without destroying them?" Yes, undoubtedly, and the writer is not without similar experience.

The crimes committed against the dental pulp I am glad to believe have been crimes of ignorance, but as Paul said to the erudite Athenians who had dedicated a religious altar to the "Unknown God," "The times of this ignorance God winked at, but now commandeth all men everywhere to repent."

The grasping of truth along new lines of thought, or the making of new applications of old truths, is often a slow and tedious process; and how often we fail to benefit by truth which is plain and easy of interpretation if we would but reason and investigate. When I first went to Philadelphia to attend the P. D. C., there were two men in the profession whose names were as household words to the readers of the dental literature of that time. These men, with almost a national reputation, were without the respect of their confreres at home. Possibly there may have been other reasons for this, but they were justly held in contempt for the unwarranted and reckless use made of arsenic for the relief of pain in excavating sensitive dentin. Hundreds of mouths suffered the tortures of periodontitis and alveolar abscess at the hands of these men, and thousands of teeth were hopelessly discolored through pulp decomposition, for lack of removal and treatment. The arsenic used was for obtunding sensitive dentin; it was minute in quantity and perfectly painless in action, but very, very certain in its results. The sensitiveness of the dentin was fully relieved, and *the pulp always died*. Beyond this no one seemed to care to investigate.

The applications afforded entire relief from the pain of excavating, but this use of arsenic—its application for sensitive dentin—*destroyed pulps*, and eventually discolored teeth and caused abscesses, and these evil consequences aroused the condemnation of the whole profession, and very naturally voices from all quarters were raised against this abusive use of arsenic; and this was well. The better practitioners were so intent upon the suppression of this evil that they failed entirely to grasp the important lesson which it taught, and so it became thoroughly instilled into the minds of the profession, that to destroy a pulp with arsenic the application must be made directly to the pulp tissue, and present practice is in entire accord with it. Great emphasis was given to the teaching that it must *not* be applied to dentin, because if so applied it would surely kill the pulp, and these paradoxical theories have confronted the profession for more than forty years.

In November, 1900, several professors in dental colleges and prominent practitioners of Philadelphia honored me in accepting an invitation to witness in my office some results of the oral prophylaxis treatment. Incidentally there was exhibited a case of tightening loose lower front teeth, illustrating the system under consideration. Here, before these gentlemen, for the first time public advocacy was made of the method of pulp destruction through an application of arsenic to vital dentin.

That I may not be misunderstood at this point, I desire to introduce a letter from Dr. J. Foster Flagg, written in November, 1900, in answer to certain inquiries by Dr. Louis Jack, relating to this subject. Dr. Flagg says:

It is nearly forty years since I have taught in lectures the drilling into teeth, not at an "indifferent" point, but accurately at a point which after pulp devitalization would, by enlarging, permit more facile and complete extirpation. This drilling was for the purpose of making an arsenious application, thus permitting obtunding applications in cavities either dangerous from proximity to gum, or "so situated that full and free ingress to the pulp cavity would be difficult." My papers in *Cosmos* were begun in March, 1872, and were all written from notes of several courses of lectures previously given. On p. 61, *Cosmos*, Feb., 1877, you will read, "We employ the arsenical paste so soon as we have obtained a drill-pit of sufficient depth to permit the secure retention of the medicament." As I had given this as practice long before 1872, in fact, from the time I began lecturing in the P. D. C. in 1863, you will see that it must be at least forty years old. At first I called these "drill-pits," but eventually gave them the name of "pockets," which they were until the perforation into the pulp cavity had been obtained. If you have a copy of Inglis "Questions and Answers," published twelve years ago, you will find all this definitely put in question 471.

To fully understand what impression Dr. Flagg's claimed teachings of forty years made upon his collaborer, Dr. Inglis, I quote a single paragraph from Dr. Inglis' most recent article. He says: "In case of pathology of the pulp, hyperemia, inflammation, etc., pressure anesthesia cautiously used offers a means of entering the pulp bulb and depleting it of its excess of blood, so that arsenic may be applied with a fair chance of successful devitalization." Here we have clearly set forth in the latest teachings of Dr. Inglis the fact that the application is not only to be made to the pulp, but that the pulp-bulb is first to be depleted, "that there may be a fair chance of devitalization." Surely there could be no plainer

evidence that Dr. Inglis understood Dr. Flagg as advocating contact of arsenic and pulp tissue to insure devitalization. If arsenic is or has been used after other methods than applying directly to the pulp, for pulp destruction, it has been in exceptional cases and because location of cavity favored escape of arsenic to the injury of adjacent parts.

Dr. Jack in a letter to the author under date of November 20, 1900, writes "Your plan of devitalization of pulp was, while not a new statement, a striking one and I shall put it in practice. The violent congestions which have often occurred when arsenic was used as an obtrudent of dentin, inhibited me from using it in the manner you pursue."

Dr. Inglis in the article quoted from further says, "Immediate removal is eminently desirable in order to avoid possible suffusion of the crown and possible delays in the action of arsenic." Here again we see complete misapprehension of the behavior and effects of arsenic when in contact with tooth tissue. Instead of "possible delays" if properly applied, it accomplishes the work of devitalization with promptness and certainty. Instead of "violent congestions" (Jack) or "possible suffusion of crown" (Inglis) devitalization proceeds quietly without congestion or pain and with no suffusion or injury to the crown.

A long-neglected application, especially in connection with young unconsolidated dentin, would naturally be the subject of engorgement of tubules or possible suffusion of the crown; but this is a wholly unnecessary concomitant. No application should be allowed to remain in the teeth over forty-eight to seventy-two hours; in general terms forty-eight hours is the limit. In upper molars the time may be extended to seventy-two hours, while in many cases of small single-rooted teeth, as upper laterals and lower front teeth, removal of pulp tissue may be effected after twenty-four hours. In cases of young unconsolidated anterior teeth, where danger of discoloration is imminent, no arsenical application should be allowed to remain over twenty to twenty-four hours.

That pulps would die from the effects of an arsenical application to dentin may have been known from the days of Dr. Spooner—the first to suggest the use of arsenic for devitalization—and Dr. Flagg may have taught the making of applications in drill-pits or pockets forty years ago: (what he really claims is, that "the drilling was

for the purpose of making an arsenious application in cavities either dangerous from proximity to gum or so situated that full and free ingress to the pulp cavity would be difficult,") but I submit if Dr. Flagg or any one else has ever advocated or taught the application of arsenic systematically to *vital sensitive dentin, with the purpose of devitalizing the pulp*. If Dr. Flagg has taught this, his intimate associates, his pupils and the profession at large have failed to understand him, and his teachings have consequently made no impression. The teachings of the profession have been and still are that the application for devitalization must be made directly to pulp tissue. In sharp contrast to this, my teaching is that that the arsenic *should never be applied directly to pulp tissue, but always to vital, responsively-sensitive dentin*.

This unique and most important method of devitalization should be known, that patients may be permitted to share in its benefits. Arsenical pulp devitalization can be accomplished for all teeth quickly, with absolute certainty, without exciting pain in the tooth, with no injury to pericementum or other parts—the application always being made to intermediary, vital, sensitive dentin, but in no instance should it come directly in contact with pulp tissue. In this method all the hitherto prohibitive or objectionable features of arsenical devitalization are removed and there is presented a perfectly safe, certain and painless mode, as comforting to the patient as it is satisfactory to the operator.

The three most important objections under old methods may be enumerated as follows: 1st. Danger of escape of the arsenic through or around the confining medium to the gum and adjacent tissue. (Failure to absolutely confine the arsenic in the cavity has been the cause of much serious poisoning of mucous membrane, gum and alveolar tissue, often resulting in necrosis, exfoliation of alveolus, and loss of the tooth.) 2d. Failure of toxic principle to act upon the pulp, through what has been regarded and defined as "patients of a type to resist arsenic." 3d. The unavoidable, often intense pain, following an application to the pulp at the point of exposure.

It should be emphasized that every arsenical application must be securely confined in contact with vital, responsively-sensitive dentin. The old methods of using cotton, cotton and sandarac, tin foil, or any of the newer cements—the oxyphosphates—should be wholly abandoned, as they are unsatisfactory, unreliable and unsafe. The

one retaining material which has proven wholly satisfactory is a white "temporary stopping." (Gilbert's red stopping is intensely irritating and should never be used in a tooth.) The white temporary stopping may be carried to place under low heat, and if worked in a dry cavity may be made to seal the application perfectly in place, a matter of vital importance.

And now a word in regard to the unsuccessful attempts to induce toxic absorption which have given the impression that there are pulps which cannot be influenced because of "patients of a type to resist arsenic." Investigation will show such cases to be in connection with vigorous, active pulps in strong, dense teeth. Arsenic, itself a powerful escharotic, acting on pulp tissue at the point of contact with the pulp, causes rapid surface engorgement and almost instantaneous paralyzation of the superficial vessels. An intermediary protective film thrown out by exosmosis is thus formed at the point of contact, interposing an effectual, permanent barrier to the arsenic or any toxic influence. The increase of pain in the tooth, practically universal, after these unsuccessful applications is due to the irritation induced by the presence of the escharotic, the protective film, and the intense activity of the pulp in its efforts at self-preservation. Now let an application of arsenic be securely confined in contact with a small section of freshly-cut sensitive dentin in this same painful tooth, and it will be observed that the intensity of the pain will rapidly diminish and the pulp will quietly succumb to the toxic influence of the arsenic acting through the tubules of the intermediary dentin.

In cases of exposed aching pulps no cognizance need be taken of the exposure, or of the disturbed irritated or congested condition of the pulp, as the pain will be quickly relieved by the arsenical application and complete devitalization enforced, if as in other cases, the arsenic is applied in the manner described to vital dentin in a freshly-opened cavity in another part of the tooth, although it be remote from the exposure.

*(To be concluded in August Digest.)*

## HEMORRHAGE—TO ARREST.

BY I. M. FRY, D.D.S., HEBRON, NEB.

I recently extracted some teeth for a patient, and several hours afterwards was called in the night to do something to stop the bleeding. It seemed that the patient had always had trouble of

this kind after extraction of teeth, etc. I took an impression of the mouth in modeling compound, and when cold trimmed it to make an appliance that could be worn in the mouth, notching it to receive a small strong bandage to be tied over the head. I then made a thin batter of plaster, adding a pinch of salt, and filled the appliance, putting it at once into the mouth and pressing it firmly to place. I held it there until the plaster was set, and without removing it the bandage was put in place and tied firmly. The socket had previously been packed with cotton saturated with fluid extract of ergot. This had been sufficient to stop the bleeding for the same patient on two former occasions of similar character. Immediate relief was given in this instance.

### FILLING OR CROWN.

BY B. S. HERT, D.D.S., ROCHESTER, N. Y. READ BEFORE THE ROCHESTER DENTAL SOCIETY, JAN. 14, 1902.

Years ago the work of the majority of dentists consisted of extracting the natural teeth and replacing them with artificial substitutes. Little attention was given to preservation and countless numbers of teeth were sacrificed that were not decayed in the least, to say nothing of those that although decayed were even in those days saved by the more skillful operators. Most of us can recall some of the old practitioners who did that kind of work, and more or less of the period when it was done, and can appreciate the great change which has taken place in the practice of our profession. Nowadays to retain the natural teeth in comfort during the lifetime of the patient, and to preserve their useful and cosmetic functions to the end, is the goal towards which every effort should be, and in the majority of cases is, directed.

One of the most important aids in carrying out this ideal during the past twenty-five years has been the introduction of crowns of various kinds: but there is danger of their being carried to abuse, and one of the most perplexing questions which confronts the conscientious dentist is that which forms my subject—filling or crown. There is no uniformity in the response, as is evidenced by the fact that sometimes we remove a crown and find that it has been placed over a tooth having only a small cavity; and on the other hand, we frequently see teeth with very little of the natural crown remaining, yet built up with large contour fillings which have done good service for many years.

One important thing to be considered is, whether the pulp is alive or dead, as the crown of a tooth with a live pulp has much greater power of resistance and will endure more strain than a pulpless tooth, and can often be filled with safety, when a pulpless tooth no more decayed would be better crowned. This applies more forcibly to the superior bicuspid, as we have more failures with them from breaking down than with any other teeth. It is with them also that we have the most trouble from recurrence of decay, even after they have been filled with the greatest care. This is discouraging to both patient and operator, and more than one dentist of my acquaintance usually advises a crown when the cavities are at all large, but there is certainly no excuse for such action.

In the case of badly decayed molars our decision should be influenced somewhat by whether or not there are any teeth to occlude, and if not, we should fill instead of crown. In cases of loose roots crowning should be postponed as long as possible, although some teeth of this character which I have crowned have been quite satisfactory, a few of them even improving. When senile decay is reached, and no fillings stop its ravages, we are justified in putting on crowns even when considerable of the natural tooth structure remains. We should always ignore the financial element in determining the question under discussion, and the wishes or advice of the patient should have very little weight. Our rule should be to fill as long as possible and crown only as a last resort.

Discussion. *Dr. Frank French*, Rochester: I presume that there is not a dentist present of five years practice who has not done some work he is ashamed of and which nothing to-day would tempt him to repeat. Seventy-five per cent of the teeth then extracted would be saved to-day, and the most of the crown and bridgework he did then would not be thought of now. Why is it that large crown fillings, also compound and approximal ones, which we could point to with pride twelve or fifteen years ago as having preserved the teeth perfectly for years, are now rarely put in? Is it a lost art, or do our young men think more of their pocket-books than of their profession? It would seem as if the young men in college to-day are not taught to do this kind of work, as it requires skill, judgment and honesty, and very few demonstrators spend much time over it.

When rubber came into use it was thought that because of its

easy manipulation it would be a curse to dentistry, which proved to be the case, for a man with very little mechanical skill could "put up a rubber job," and in many cases it was a put-up job for both dentist and patient. Twenty-five years after this dentistry got another black eye from which it is slowly beginning to recover. I refer, of course, to crown and bridgework. With its advent many dentists sang to themselves that good old Methodist hymn—"This is the way I long have sought and mourned because I found it not." What was the result? From the mistress in the parlor to the maid in the kitchen, and from the merchant in his office to the porter in the warehouse, came the fitful gleam of gold whenever their mouths were opened. Thousands of good teeth were cut off and replaced by crowns, and where one or two teeth were gone the adjoining ones were cut off to be used as abutments for a bridge. I have often removed crowns and found only a small approximal cavity on either side, and the tooth ground down just enough to admit the crown. Thousands of such teeth have been sacrificed that could have been filled and that would have done good service for many years. The reaction has already begun and the practice is now generally disparaged at society meetings. A revulsion has also taken place among our patients, so we may hope for better things. I do not mean to decry all crown and bridgework, for in many places it is invaluable, but in the closing words of the essayist, "Our rule should be to fill as long as possible and crown only as a last resort."

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### PHYSICAL DIAGNOSIS AS RELATED TO DENTAL COLLEGE CURRICULA.

ABSTRACT OF CHAIRMAN'S ADDRESS. BY A. H. PECK, M.D., D.D.S., CHICAGO. READ BEFORE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, AT SARATOGA, JUNE 10-13, 1902.

During the past few years the courses of study have been lengthened in all professional schools. Only a short time has elapsed since a medical student could graduate after attending two courses of instruction of six months each, but now one is required to attend four courses of nine months each, after having gained a good scientific or classical education as a foundation upon which to build his professional knowledge, thus requiring from six to eight years of college work to receive his degree of doctor of medicine. Dentistry

has by no means been slumbering, for the educational requirements for admission to a dental college have been steadily advancing, and the number of years and length of terms increasing, until now schooling equal to the second year of high-school work is required, and in another year four years of seven months each will be required.

Only a few years ago a student received a few lectures on physiology, when that part of his course was considered finished, but now it is one of the most important branches he has. Histology, pathology and bacteriology have become important subjects, and the dentist would also be considered very lame without a knowledge of anesthesia and oral surgery. More than this, the amount of practical work that must be done as a part of the dentist's preliminary education has more than doubled. What is the object of this advance? It is that his knowledge may be broadened, extended and that he may be placed on a higher plane with mankind, as well as that he may be better able to satisfy himself and his patients after engaging in the practice of his chosen profession.

We, as professional men, are continually being called upon to give opinion as to the etiology and prognosis of certain diseases, and who will gainsay the statement that this we should be not only willing but able to do, and that it is imperative we be as nearly correct in such counsel as possible. At times we find this easy, and again it taxes us to the limit, if not beyond; all our knowledge and reason is called into play before we are able to make definite statements. It is not always an easy matter to tell just how much vitality a patient has, or how much of a nervous shock can be endured, or how long one can remain in a dental chair at a sitting without sustaining material injury. This we, as dentists, should know, so that our patients on leaving our offices will have received professional benefit instead of injury.

Who of you has not seen or is not cognizant of neurotic patients who were nervous wrecks for days after having had a large amount of dental work done? With the requisite knowledge and the exercise of forethought and judgment all this could have been avoided. A few more sittings of shorter duration would have completed the work, at the same time acting as a stimulus rather than a nervous shock. This knowledge we can gain only by a thorough study of our patients, and an understanding of the cause of their ailments. I hope to see the time when a dentist will inquire into the health

and symptoms of his patients before deciding on the amount of work that is proper and safe to be done at any one sitting, as a physician should before prescribing a certain amount of a drug or drugs.

To judiciously outline our work we, as dentists, must have as thorough a knowledge as possible of the various diseases of mankind, especially those affecting the vital organs or those organs most likely to suffer when shock is inflicted. The symptoms of these diseases, also the physiologic changes that may occur, are necessary to be understood. Who of us would keep patients afflicted with organic heart disease in the chair for a long and fatiguing operation if we were able to inform ourselves of their true condition.

There is only one way for us to gain this knowledge, and that is by familiarizing ourselves with the normal heart as to location, size, beat, rhythm and sounds, thus enabling us to recognize pathologic conditions when present. How embarrassing it must be for any dentist, after advising the administration of a general or local anesthetic, to be told, on consulting the family physician, that such a course would mean certain death to the patient, whether true or not.

Physical diagnosis is the term used to designate those methods which are employed in the detection of disease during life by the anatomic changes produced by it. The nature and extent of such changes can be recognized and appreciated only by the divergence which they cause in the affected organs from the known physical condition of these organs when in health. The significance of physical signs in disease cannot be determined by theory; but only by clinical observation confirmed by examination after death.

If it be granted that it is at all desirable that the dentist should possess this knowledge, it at once becomes evident that he must enter into a systematic and thorough study of the only methods by which these physical signs can be determined in the living subject, and these are: 1, inspection; 2, palpation; 3, mensuration; 4, percussion; 5, auscultation; 6, radioscopy.

Some of these methods have been in use for many centuries. Palpation, for instance, was used in the Neolithic or polished stone age, 1500 B. C., to demonstrate the presence of fluctuation, while radioscopy is practically new. This is the outcome of the discovery of the X-ray, by which with the use of the fluoroscope, tumors or solid bodies, that were impossible of discovery before, are located in various parts of the body. Fractures of bones, the exact kind and

position, are determined by looking at the bone direct. Tumors of the internal organs are observed by this means, thus enabling one to diagnose conditions which were impossible of discovery before the X-ray was in use.

One must also be conversant with the various areas into which the body is divided, and which are bounded by definite anatomic relations. This is necessary that one, being familiar with the normal size and location of an organ, can determine whether it is in its proper position. It is essential to know that the first area from a physiologic standpoint is the supraclavicular region; and that this area is definitely bounded below by the inner three-fifths of the clavicle, internally by the trachea, and superiorly by a line extending from the junction of the outer with the middle third of the clavicle to the top of the trachea. Also to know that normally within this area are to be found the apex of the lung, the carotid artery, the subclavian artery, the subclavian vein and the jugular vein. Next below this is the clavicular region, which is that part of the thoracic cavity lying back of the inner three-fifths of the clavicle. An understanding of the anatomic boundaries and contents of this region is also necessary.

The most important regions, from the standpoint of the dental practitioner, are the following: Infraclavicular, in which are to be found, on the right side, lung tissue, the ascending vena cava, the right bronchial tube lying back of the sterno-costal articulation, and a small portion of the arch of the aorta. On the left side are found the pulmonary artery from its origin to its bifurcation, the left bronchial tube lying a little below the second sterno-costal articulation. The next region of special importance to the dentist, and which lies immediately below the preceding one, is called the mammary. The lowest region in the anterior aspect of the thoracic cavity is called the inferior mammary.

Centrally located is the sternum, this area being divided into three regions: (1) The suprasternal; (2) the upper sternal, and (3) the lower sternal. The back is divided into three regions: (1) The suprascapular; (2) the infrascapular, and (3) the interscapular.

All these regions should be carefully studied, as indicated above, in the two instances in which the boundaries and contents are stated.

A knowledge of the size and exact location of the heart is especially important. In the average subject the base of this organ is

found at the second intercostal space, the apex beat or the maximum impulse being at the fifth intercostal space, from three-fourths to an inch to the left of the sternum. It must be understood that the apex beat does not locate the apex of the heart, the latter being about an inch to the left of the heart. The anatomy of the heart must be studied. It is necessary to know that there are four different valves, and what is expected of them in the performance of their normal function, and that the positions on the chest where the sounds made by the valves can be most distinctly heard are not immediately over the organ.

I thus briefly outline this foundation work that there may be no mistake as to what I consider necessary in the schooling of prospective dentists, that they may be able intelligently to apply the six methods of eliciting the physical signs of the various pathologic conditions of those diseased organs bearing directly on the practice of dentistry. It is also necessary to be thoroughly conversant with the meaning of these various methods of physical diagnosis, how each is to be employed, and what is to be learned by it; that inspection means only that which can be determined by looking at the patient without further means of diagnosis; that palpation means the examination of the parts by the laying on of the hands, and in this method only the tips of the fingers may be used, or the palms of the hands as a whole; that with mensuration certain facts are to be determined by the process of measuring; that by percussion is meant the tapping of the chest to elicit certain sounds under the varying conditions; that there are different methods of percussion, the immediate and the mediate; that auscultation is the act of listening for sounds within the body, chiefly to ascertain the condition of the lungs, heart, pleura and other organs; that there are different methods of auscultation, the immediate, which is the application of the ear directly to the part, and the mediate, which is by use of the stethoscope. The pulse is such an accurate index to many of the lesions of the heart that it is necessary one shall understand it in all its variations.

This is a subject that has engaged my attention for some time, and it was my desire more than two years ago to present this subject to the profession and urge its teaching in our schools, but listening to the advice of trusted friends that the time was not ripe for it, I desisted. During the past year it has been taught in the institution

with which I am connected. As I see it now, I cannot understand how anyone can advise otherwise. I hope to see dentists so instructed in the future that they shall be able to recognize diseased conditions of at least these vital organs, and thus be enabled to avoid serious and possibly fatal mistakes. When this knowledge is acquired and successfully practiced, the dentist at once gains the implicit confidence of his patients, his word with them becomes law, and his opinion is sought and respected. Such a dentist is a real benefactor in the community in which he resides and his success is assured. He also has the satisfaction of knowing that he is one who has participated in that higher education, the practice of which can result only in assisting to elevate the standard of his profession, and to place it on a higher plane in its relation to other progressive professions.

### FORMALDEHYDE.

BY F. W. PROSEUS, D.D.S., ROCHESTER, N. Y. READ BEFORE THE  
ROCHESTER DENTAL SOCIETY, MARCH 18, 1902.

Methyl aldehyde or formic aldehyde, the simplest possible aldehyde, is derived from the homologous series of hydrocarbons. The first of this series is methane or marsh gas, which has the for-

$$\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}-\text{H} \\ | \\ \text{H} \end{array}$$
 mula  $\text{CH}_4$  (or graphically  $\text{H}-\text{C}-\text{H}$ ), the one from which methyl al-

$$\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}-\text{O}-\text{H} \\ | \\ \text{H} \end{array}$$
 cohol  $\text{CH}_4\text{O}$  ( $\text{H}-\text{C}-\text{O}-\text{H}$ ) is derived. This gives by further oxida-

$$\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}- \\ | \\ \text{O} \end{array}$$
 tion formic aldehyde  $\text{CH}_2\text{O}$  ( $\text{H}-\text{C}-$ ).

When we consider that the elementary structural formation of organic life and starting of all carbohydrates or food products come from this source, and that a substance which is akin to a poison and yet the only possible source of proteid anabolism is the basis of our very existence, the mind is indeed startled by the greatness of God's vast chemistry of nature.

The present generally accepted theory among botanists regarding

the conversion of carbon dioxid and water into carbohydrates, which takes place in green parts of plants under the action of sunlight, is known as the aldehyde theory, and was first proposed by B yer in 1870. It assumes that water unites with carbon dioxid in the chlorophyll grains to form formaldehyde, which is at once transformed into more complex substances and finally into starch, and from this starch the plant is nourished. The surplus not needed at once by the plant for growth is stored in tubers and grains, and is made of service to mankind for food.

Dr. Fisher of Berlin found that it is possible to build from formaldehyde the sugars, from one element to thirteen of carbon, and that those of the series of  $C_3$ ,  $C_6$ ,  $C_9$ ,  $C_{12}$  were fit for food.

Formaldehyde was discovered in 1869, and in 1888 Loew discovered its germicidal action. In Merck's market report for 1896 it is listed with the following statement—non-irritating, non-toxic, non-corrosive, surgical and general antiseptic, in wounds, abscesses, etc.; for clothing, bed linen, walls, etc.; food preservative, for wine, beer, jellies, preserves, etc.; preservative of collyria and anatomical or botanical specimens.

E. J. Bevan states that four drops of the commercial article to four ounces of milk is sufficient to keep samples perfectly (for chemical analyses) for six weeks or longer. It is being used by milk venders in Europe and the United States to give their milk keeping qualities, but with doubtful propriety. Weigel and Merkel found that it coagulates the casein and renders it insoluble in hydrochloric and acetic acid. On this ground its use in milk and food is inadvisable, as its general action on the human system has not been studied.

Formalin (sometimes incorrectly called formol) is the trade name of a 40 per cent solution of formaldehyde ( $C H_2 O$ ) in water—a colorless, pungent gas, obtainable from wood alcohol, and readily soluble in water. It volatilizes slowly. Used in any sensible way it is perfectly harmless. The fumes when strong prove irritating to the throat and eyes, and if long continued might be harmful. A guinea pig kept under a jar for several hours with fumes from forty per cent formalin died some days after being taken out. It is not poisonous even when taken internally. Dr. Samuel Rideal says, "As to its toxic effect, I have not heard of any ill effects, and have myself repeatedly drunk the one per cent solution." Like every

other substance having active properties formalin is likely to prove injurious, however, if taken in excessive amounts.

A horse of about 750 lbs. weight was offered nearly a pint (300 c. c.) of dilute formalin containing four per cent of formaldehyde. He drank part of it voluntarily, and the remainder was given in the usual manner of a drench, but without resistance on the part of the animal. No inconvenience or bad effects were shown at the time or subsequently. Another horse was subjected to nine c. c. of full strength (forty per cent) formalin injected into the jugular vein. The reaction was immediate and violent. The head was first strongly shaken, with stamping of feet and other spasmodic motions. The muscles of the neck became rigid, and the head was drawn down as in tetanus. These effects lasted about twenty minutes, and in thirty-five minutes had entirely disappeared. The horse now ate and acted in a normal manner. After two and one-half hours the same operation was repeated with twelve c. c. of full strength formalin. The same effects were exhibited, but were much less violent. Six hours later the animal was killed, and showed only slight and unimportant irritation of the blood passages, such as the injection of a weak brine or other harmless solution would produce. The effects were not of a toxic nature. In still another test a strong, healthy horse of 950 lbs. weight was injected with twenty c. c. of undiluted formalin. So large an amount of irritating fluid could not fail to produce marked effects when thrown suddenly into the circulation. The symptoms which followed were somewhat different from those of the previous more moderate and gradual treatment. Marked uneasiness showed in three minutes, rising to distinct symptoms of colic, with spasmodic action of the alimentary tract. At the end of fourteen minutes the pulse was 76 per minute and weak, but no strong cerebral or tetanic symptoms had developed. At the end of an hour cyanosis was strongly marked, showing that the blood had been profusely affected. The horse was killed at the end of two and one-half hours, and the blood was found to be very dark and slow in coagulating.

These cases clearly demonstrate that it takes a large amount of formalin to produce marked or lasting effects, and that even under exceptionally violent treatment formalin has little or none of the action of a poison, but may have serious effects as an irritant, or possibly a disorganizer when in sufficiently large quantity.

F. W. Tunnicliffe and O. Rosenheim (London, 1901) drew from their results the conclusion that formaldehyde had no appreciable effect upon the proteid metabolism of a child, given the drug for a period of 27 days in its food. Doses of 1-5000 in milk, or 1-9000 in total food and drink, exerted no appreciable effect on the nitrogen or phosphorous metabolism or fat assimilation. In healthy children it produced retention of water in the body in above doses.

("Action of Formaldehyde on Enzymes." C. H. Bliss and F. G. Novy, Ann Arbor.) Formaldehyde in very small quantities will exert a peculiar action on proteid material, hardening it and otherwise altering its chemical and physical properties. Fibrin when allowed to stand in a solution of formaldehyde as dilute as 1-5000 soon hardens and resists the action of proteolytic enzymes, and although it may finally be digested, the process is nevertheless retarded. Again, egg albumen and blood serum to which a small amount of formaldehyde has been added will not coagulate when heat is added. In small amounts it inhibits bacterial growths and in larger quantities it promptly destroys them. Fibrin which has been kept in a solution of formaldehyde 1-100 for a day is scarcely affected by a solution of pepsin hydrochloric acid in a temperature of 38° C. for several hours. On the other hand, formaldehyde may be added to the digestive fluid in the proportion of 1-100, and at the end of several weeks this solution will be found to be still active and will dissolve fresh fibrin nearly if not quite as rapidly as a fresh solution of pepsin hydrochloric acid.

According to Loew, pepsin and diastase lose their activity when left in contact with formaldehyde for one day, solution being one gram of ferment to ten grains of water and five c. c. of fifteen per cent solution formaldehyde (= five per cent formaldehyde). Other ferments—emulsion, papain, trypsin, used in the form of crude products, gave precipitates with formaldehyde which were very difficult of solution in acids and alkalies.

Simons found that formaldehyde had no apparent effect on peptic digestion, but a very depressing action on the pancreatic ferment (trypsin), even one part in 2,000 being sufficient to retard digestion.

In Wurtz's "Dictionaire al Chemie" the statement is made that the soluble ferments, diastase, pepsin, pancreatin, etc., are all modified completely by formaldehyde. This statement Profs. Bliss and Novy claim does not hold true for pepsin, malt diastase, and rennin.

In their experiments saliva and malt were employed, and fresh pancreatic gland extract was used. Liquids for tests were 1-100 and 1-1000 of forty per cent solution formaldehyde Benedicenti (Archiv. of Anat. U Physiol, Physiol Abhehlung.)

Benedicenti claims that formaldehyde hardens proteids and renders them incapable of swelling in dilute hydrochloric acid and of being digested by pepsin hydrochloric acid or pancreatic juice.

From the experiments of Bliss and Novy it was found that pepsin and fibrin were soluble in formaldehyde of 1-100 after twenty-four hours and in solutions of 1-2500 in forty-eight hours. Their results, however, show that formaldehyde in very small amounts will alter fibrin in the course of a few days so that it will offer considerable resistance to the action of proteolytic ferments, peptic digestion being least affected.

Milk is not coagulated by formaldehyde, but it retards the coagulation of milk by rennet. (Pottevin.) Weigel and Merkel found that the digestion of milk and egg albumen is prevented by formaldehyde. It was proved that the action of digestion of casein with pepsin hydrochloric acid was retarded the same as fibrin if small amounts of formaldehyde had been added. From these experiments it was shown that a one per cent solution of formaldehyde acting on fibrin for twenty-four hours will render it practically insoluble in pepsin hydrochloric acid. Also, when added to milk it alters the casein to such an extent that it will not be precipitated, or but slowly on addition of rennet ferment.

Simons states that formaldehyde has no apparent affect on peptic digestion. In the action of formaldehyde on fibrin in the increase of formaldehyde there is a decrease of fibrin digested, due to the action of the formaldehyde on the fibrin and not to an alteration of the pepsin. When formaldehyde was added to saliva in small amounts it had very little effect on ptyalin in large amounts; at ordinary temperatures it had a depressing action but did not destroy the ferment for several days.

Glutol—(Dr. Schleich-Schering and Glatz Formalin Gelatin) is an odorless, non-irritating and non-poisonous antiseptic powder, forming a hard scab in a few hours when in contact with a clean wound. In infected and suppurating wounds it rapidly terminates pus formation. It is officially employed in the Berlin Fire Department as the best dry dressing.

Dr. Low of Buffalo has very ably demonstrated the practical sterilization of dental instruments with formaldehyde gas generated from wood alcohol or Columbian spirits.

From the data here gathered formaldehyde should be among the antiseptics in dental practice. In weak solutions it inhibits bacterial growths, in stronger it destroys them. Its action upon the digestive ferments has been demonstrated to be harmless in small amounts, especially when added to saliva, as the ptyalin was not affected, and as the dental treatment is limited to the oral cavity no ill effects could follow from the use of formaldehyde except irritation of the mucous lining and gingival borders of the gums from strong solutions.

Instruments placed in formaldehyde solutions darken and rust. Dr. Hurdy of Indianapolis, claims formaldehyde does not darken instruments unless organic matter, blood, etc., is on them. Dr. C. E. Marshall, Bacteriologist Michigan College, had instruments immersed for six months in a solution of formaldehyde two per cent of the forty per cent solution. I recently saw them and they were clean and bright, and no rust present. Borax had been added to the solution, which he claimed prevented rusting. He recommended this form of sterilizing instruments as very satisfactory and preferable to the gas-lamp method.

Mr. B., whom I recently met, was using a mouth wash of one dram of formaldehyde to twelve ounces of water for pyorrhea (about one per cent solution.) He claimed it was irritating and reduced it one-half. The tongue was stained a deep bluish black. He believed this staining was produced by the formaldehyde, but as there were indications of mercurial treatment it could not be considered important. He also applies one-half per cent solution for falling hair, and cited a case with good results used for grayness.

Kellog's fiddle-string paste, which turned up almost simultaneously with the introduction of pressure anesthesia, probably contained cocain and formaldehyde. A kind of I touch the button (cocain) and you do the rest (formaldehyde.) In most cases the cocain made connections, but after the formaldehyde failed to string its fiddle, and when toothache later necessitated opening the pulp-chamber, the raw material (putrefaction) was found instead of the finished chord.

The European dentists are going one step further by removing

the pulp body and filling the chamber with some paste containing formaldehyde. This practice is really worthy of careful investigation, and should results prove the uselessness of removing the portion of pulp in the canals, the care and treatment of pulpless teeth will be brought from a difficult to an easy operation. However, thorough instrumentation in removing the contents of the canals is probably the safest practice, but undoubtedly many times portions are left, even by painstaking operators, and in such cases a root filling containing formaldehyde is ideal.

Capping exposed pulps with cements or pastes containing formaldehyde I believe to be doubtful of recommendation. Gradual pulp devitalization takes place, and as the amount of formaldehyde is not sufficient to thoroughly harden the mass, decomposition eventually follows. Capping nearly exposed pulps with formaldehyde cements is probably good practice, as the absorption of the formaldehyde by the pulp does not take place, and the bacteria in the tubuli of the area of dentin over the pulp are inhibited from further activity.

Some of the formaldehyde preparations on the market are highly irritating when placed over the pulp. Formagen cement filled a long felt want, but was difficult of manipulation. Schuer's formaldehyde paste has given me great satisfaction, and also the iodoform root filling. It is easy of manipulation, soluble in the essential oils, creosote, and carbolic acid, it can be pumped into the finest canals, and as a temporary dressing under gutta-percha it sterilizes cavities and keeps comfortable teeth with large areas of decay until a future visit. In setting crowns and bridges temporarily it prevents accumulation of saliva between the tooth and crown and arrests decomposition, and has no odor even after several weeks.

Formaldehyde as a prophylactic in dental operations very strongly appeals to me. Dr. R. H. Hofheinz before this society three years ago gave his method of applying the rubber dam and forty per cent solution of formaldehyde. Since then I have treated teeth in this manner without the formaldehyde irritating the soft tissues, as the doctor had experienced. The beneficial results from this method I can only guess, but believe the future may tell us of the true merits of what appeals as a scientific and rational treatment.

Discussion. *Dr. R. H. Hofheinz*, Rochester: The dentist's interest in the drug begins with its local application, and as an anti-

septic and germicide it deserves our practical attention. It seems to me that its irritating effect upon the soft tissues, if used in the forty per cent saturated solution, is underestimated, as it is extremely irritating. I called attention to this fact when formaldehyde was introduced. It has the most valuable property a germicide can possess, as it diffuses with great rapidity and combines with all sulphureted and nitrogenous material and decomposition, and forms new chemical compounds which are in themselves antiseptic. These qualities give the drug a unique position in dental therapeutics. As a pulp-capping, in the shape of formagen cement, I place it very high, providing the pulp is in a slightly pathologic condition. A pulp physiologically normal on its exposure is safer capped with a neutral and non-irritating substance, as oxysulphate of zinc. When, however, a doubt exists, and capping is nevertheless demanded, a preparation containing formalin, owing to its preservative quality, is decidedly to be preferred. The same is true where dead pulp tissue has been left in the canals. We are, however, looking altogether too much for drugs to take the place of conscientious, painstaking operative methods. Partial removal of pulp tissue, with the assumption that formaldehyde or any other drug will render the remainder inert and harmless, is as yet an unscientific and slovenly method of procedure. There are a few cases where it is justifiable, but to apply it to all dead pulps is malpractice. The question arises, if a root canal is mechanically well cleaned and thoroughly sterilized before filling, of what need is an antiseptic? If there is an after-infection through the tubuli, irritating the peridental membrane, it may be indicated, but if the infection comes from the periapical space, where microbic life may have been dormant until something caused disturbance, an antiseptic filling is less efficient.

*Dr. J. H. Beebee, Rochester:* I have used formaldehyde for some time in my practice, employing the following formula: Cocain, hyd., Thymolin aa grains 15, mix thoroughly and add formaldehyde, drops 10; oxid of zinc, grains 30, and make a paste. As formaldehyde is very volatile, I keep this preparation in a ground-glass covered bottle, oiling the joint. This oil is essential both to exclude air and to keep the paste from cementing the cover to bottle. This preparation will keep about a month before hardening, and it must then be renewed. As it is almost insoluble, I use two

bottles, cleaning one with sulphuric acid while the other is employed. I use the paste on cotton as a dressing in the treatment of putrescent canals, also for filling canals. In the latter case I wind silk fiber on a broach, and having dipped it into the paste I carry it to apex of root, continuing the procedure until the canal is filled. This plan has the advantage that in case of subsequent inflammation the strong silk fiber allows the whole filling to be removed. This paste hardens until it becomes about like half-dried putty, and it is non-absorbent. It is well known that formaldehyde hardens tissues without shrinking them, and even if all the pulp should not be removed, there is no need for anxiety. I recently devitalized the pulp in an upper third molar, and having difficulty in getting at the canals, I packed the chamber with this paste. On removing extraneous matter at a subsequent sitting, I found the pulp hardened so that it looked like slivers of red wood.

#### THE TRUE DEPARTURE—EXTENSION.

BY A. G. BENNETT, D.D.S., MINNEAPOLIS, MINN.

The "New Departure" has departed—

The atmosphere is calmer;

The Chase was up, the Flagg was flying,

But the palm has gone to Palmer.

Still in the procession with some digression,

But never in a "hollow,"

He did not deem it wise—"the extreme

That few will choose to follow."

All three did agree on the theory,

Which was the electro-chemical.

It was discussed 'mid smoke and dust

Decidedly polemical.

There was a gleam like morning beam—

The scheme was set agoing

But ere one had said, "Look out ahead!"

The train was surely slowing.

Though in these currents did occur

Some incident destruction,

The currents of thought were quickly caught

By circles of induction.

They flashed a light that aided sight,

Revealing still some lesion.

One thing was clear—we must have here

*Extension of the vision.*

When all concede that some must lead,

There is no need of blinking

The fact that few must always do

*The microscopic thinking.*

## II

Like dots and dashes and far-off flashes,

Came hints of an invasion

Of hosts that blight though out of sight,

The cause and the occasion

Of all diseases that ride on breezes,

Or lurk within the water;

The mail of health they pierce by stealth,

And all the vitals slaughter.

That "Giant Killer," our own Miller,

Pursuing the germ to his lair,

Has driven the picket from the thicket,

And laid his hiding-place bare.

And then the "Lactics," which our old tactics

Did so disastrously ignore,

Were so dammed in with germs jammed in,

Only ruin wrought the more.

Signs of acidity we scan with avidity,

And follow to their sources.

Our lines we lengthen and doubly strengthen,

To defend the vital forces.

O ye untactical, so-called practical,

That nothing see beyond the sight,

*Proof of existence is in persistence—*

The undefeated still will fight!

Who faces danger must be no stranger

To tactics of the foeman;

It is not shouting that leads to routing—

But only exposes the "showman."

Like those under the banner of the strenuous "tanner,"

We soon learn to love a "hammer,"

Who has the design to fight it out on this line,

"If it takes the entire summer."

## III

What's remaining but true training,  
Since the fight depends on you.  
'Tis self-reliance with true science,  
That will bear each safely through.  
Old campaigners are the trainers—  
These the trusty, though the few;  
They bear the banners, these great planners—  
Our own leaders, tried and true.

There's one suggestion of a question,  
And no mystery or myth,  
For 'tis decided fame's divided  
Fair between our Black and Smith.  
If they be not equal, wait the sequel,  
As the years go wheeling by;  
'Tis safe investing in time's true testing,  
And the Future's sure reply.

'Tis no invidious or "deciduous"  
Effervescent scheme they own,  
But extension for prevention  
Just beyond the danger zone.  
And the extension of prevention  
Where "microbic plaques" are grown;  
And then extension of apprehension  
Of the reaping what is sown.

But great extension, frail retention—  
Squarely based or on a curve,  
Did you but know it, time will show it,  
You are building on your nerve!  
Go carry extension to the fourth dimension—  
Most truly the "crowning" endeavor.  
'Tis this suggestion that "corners" the question  
And settles it once and forever.

All cloudy conditions, strategic positions,  
And all that forms the environs—  
These may be sure much more impure  
Than the vilest verses of Byron's.

Of all the states that Nature hates—  
Which mean eradication—  
That fill alone a shadowy throne—  
That status is stagnation.

## IV

The very mention of extension  
Brings out the blank areas,  
Where there is need of a better breed,  
And extension of ideas.  
Extension then of comprehension,  
Till Nature's order reigns,  
Where mental chaos would betray us  
In anarchistic brains.  
The merest mention of prevention  
Brings out the true ideal,  
And each resource and all our force  
Combine to make it real.  
Like the strenuous life with vigor rife,  
With virile force abounding.  
It has no need of any creed—  
It does its own expounding.  
A strong alliance then form with science,  
That never swerves a fraction;  
Triumphal arches mark her marches,  
*But never a reaction.*  
With steady stages down the ages,  
And up against this hour,  
She moves along with current strong,  
And with resistless power.  
Not revolution, but evolution!  
Stage by stage along the grooves,  
In the grand endeavor in which forever  
The whole creation moves.

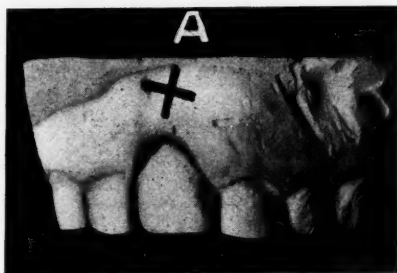
### IMPLANTATION—ONE OF THE PERMANENT OPERATIONS IN DENTISTRY.

BY ROBT E. PAYNE, D.D.S., M.D., NEW YORK. READ BEFORE THE ALUMNI ASSOCIATION OF THE NEW YORK COLLEGE OF DENTISTRY, MAY 21, 1902.

Let me quote from Dr. J. S. Marshall's Operative Dentistry, 1901:  
"Implantation is an operation not to be recommended, except under

the most favorable circumstances, namely, when a freshly extracted tooth can be inserted into the newly-formed alveolus of a youth or young adult of the most perfect health and constitution." I do not limit implantation to such a narrow field, as it has a place in everyday practice; it ranks among the permanent operations of dentistry; it can be performed without pain. Age is no barrier, providing other conditions are favorable.

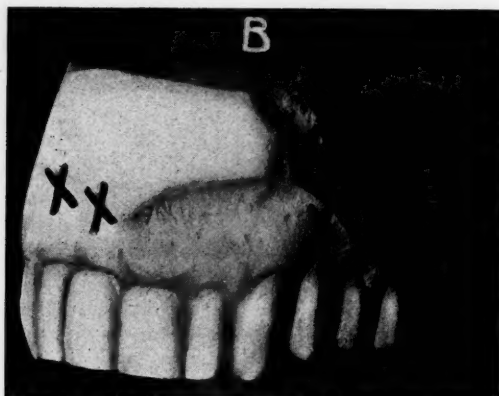
In the year 1882 Calvin Brooks lost a right superior central incisor by extraction. The gum and process healed promptly and the missing tooth was replaced soon after by an artificial substitute on a vulcanite plate. On October 5, 1885, Dr. Wm. J. Younger implanted a natural tooth for this patient, then aged 45, to replace the missing incisor. The clinic was given in the presence of Drs. Wm.



Atkinson, W. W. Walker, E. P. Brown, E. S. Gaylord, M. L. Rhein, C. M. Richmond, C. F. W. Boedecker, Jas. McManus, R. Ottolengui, P. L. Hull, S. C. G. Watkins, B. F. Luckey, N. W. Kingsley, and others to the number of probably one hundred. Dr. Younger proceeded as follows: No cocain or other anesthetic was used. The gum was opened by a double flap from the crest of the process each way. A cone socket was then trephined in the bony process to receive the central incisor root full size, care being taken to keep the pericemental membrane intact. The tooth used had been out of the mouth about four months. After removing the dried contents of the pulp chamber, the tooth and open canal were sterilized with bichlorid 1-5000, then dried and filled, and the apex sealed with gold. It was placed in the new socket cut to receive it, and ligated in position with silk twist. The entire operation consumed forty-five minutes. Eight days after the clinic the ligatures were removed and the implanted tooth received no further care.

This incisor was serviceable in every sense for a period of nine years and a month, and was of as good color as any tooth in the mouth. It probably would have remained in many years longer, but Dr. Charles Atkinson, after advising with Dr. Younger, extracted it to see what the root of an implanted tooth after nine years would develop. A considerable degree of force was required to remove the tooth from the socket, and it was in good condition, except a very slight resorption where the apical foramen had been sealed.

The left central incisor in the mouth of this patient had been

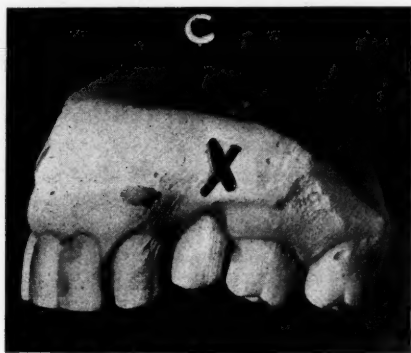


filled with gold by Dr. Secord at a clinic, and as this tooth was dead and the time limited, it could not be thoroughly treated when the filling was inserted. The tooth gave some trouble, part of which was attributed to the implanted incisor, and was the only excuse for extracting the implanted tooth, other than to make examination of a nine years' success. The left central after treatment resumed normal conditions.

Mr. Brooks, at that time 54 years of age, was again minus a central incisor and compelled to once more take refuge in an artificial substitute. In 1887, three years after Dr. Atkinson had extracted this tooth, I learned of the case, sent for Mr. Brooks and on May 7 I implanted another central incisor, occupying the same position as the one inserted by Dr. Younger. This operation was

accomplished at eight o'clock in the evening, by gas-light, and was painless under the effect of two per cent cocain. That was five years ago this month. The tooth is as firm, healthy and serviceable as any tooth in the mouth, and the patient is 62.

I submit a model of this case, cast marked A. Also models of two other cases in which I implanted three anterior teeth in one mouth and replanted three in the other, both women, one forty-two, the other younger. The case of replanting, model B, patient forty-two, was performed on account of looseness following Riggs' disease. This case was treated in June, 1897, three teeth being removed, the sockets deepened, and the teeth replaced in position in the arch. The other case, model C, implanting, was treated in



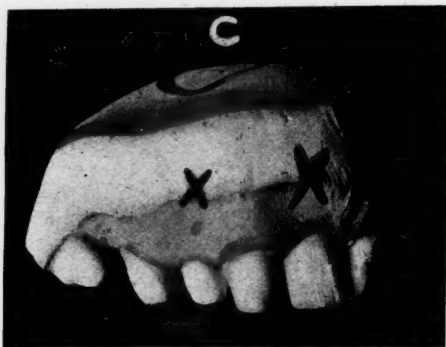
January, 1897. Three front teeth were implanted. All are firm, healthy and serviceable. All teeth replaced are marked X on models.

During five years I have a record of thirty, and can trace but one failure—due to a fall which injured the process severely. I have a record of one other case of three upper anterior teeth, right central incisor, left cuspid and left bicuspid. This case was one of the most difficult I have ever undertaken, for the reason that it was complicated with pyorrhea in an aggravated form. It was reported in *Items of Interest* in 1897, and the teeth are healthy and serviceable at this date.

In this case the process was very scant where the right superior central was to be implanted. I found it necessary to use a very

small root, to which I adjusted a Logan central incisor. I cut two flaps, the anterior long and the posterior short. The long flap was brought forward to fill up the deficiency due to shrinkage of the process. To shorten the cuspid for implanting in this case, I cut out a section and re-united the crown and root by means of a gold pin, rather than cut off the end of the root.

This record of ten implantations, with other successes wherein conditions have been very unfavorable, encourages me in the belief that age and condition are not a barrier; that any mouth that will retain other natural teeth will retain any of the ten upper anterior ones implanted in single spaces. Natural sound teeth implanted



for a patient under 60 years of age will remain firm and serviceable for five years, with chances greatly in favor of lasting ten. I think this is proven by the results in these cases. I consider this evidence a claim for implantation as one of the permanent operations in dentistry. You do not expect more from other operations; why should you from implantation? Do not deprive your patients of the benefit that an implanted front tooth can give, simply because it does not last a lifetime. It has a place. Its usefulness is greatly in favor of single spaces where one tooth is missing.

A small root must be used. Shorten the tooth and make the cone shorter by cutting out a section of the root from the enamel border, about one-third of the way to the apex, then splice the two parts with a gold pin, cement in the root canal and pulp-chamber. In trephining a socket, incline the apex of same lingually or you may

cut through the anterior plate of the superior maxilla and the operation will be a failure. The root must be surrounded by the bony process. Always cut a double flap. Do not remove any gum—you will need it all for restoring the gum festoon. Keep the margin of these flaps packed with an antiseptic, boric acid, iodoform, or resorcin, to prevent infection during the process of repair. Avoid direct occlusion. Keep the pericemental membrane intact.

Failures are probably due to cutting through the anterior plate, cutting too deep, infection, denuding membrane, imperfect splinting, as gold bands lodging food particles that remain and develop bacteria. I believe successes are due to the selection of mature teeth, to an intact membrane, small roots, never cutting off apex, pitching the tooth lingually, preventing infection in the manner described, ligating with silk twist and avoiding direct occlusion.

If a tooth be selected, extract same from an adult in good health and more than forty years of age. Such a tooth, mature, firm and hard, is resistant and lasting and will not break down and resorb. There is no advantage in a large root. The membrane intact aids in the process of bone repair about the root of the tooth; it becomes swollen, acting not unlike a sponge graft, and in a degree closes the space between the pericemental and alveolar walls, also affords a scaffolding for the formation of loops of blood-vessels, and in this way furthers the process of bone repair about the root.

I implanted two gold capsules in an upper jaw in June, 1900, and a silver capsule at the Paris clinic. Since my return I have implanted a tin capsule, gold plated. The capsules were spread by means of rubber to accurately fit the socket, and in this a porcelain-rooted continuous gum tooth was cemented. The capsules gave no pain; the teeth were firm for a time but were all failures, remaining in the jaw but two months. The operations were faulty, due to imperfect capsules.

While in Berlin I met Dr. Hahl, a dentist of note, who for the past fifteen years has assisted Dr. Von Bergman, the world-famous surgeon of that city, in the adjustment of metal splints. He exhibited eight or nine models, or duplicates of metal splints, illustrating the method of uniting the fragments of the lower jaw, following resection for carcinoma. Aluminum splints were used, and held in place by silver screws. This united the ends of the jaws in position and sustained an artificial denture, making the patients comfortable while they lived, in some instances extending into years.

Dr. Michel of Paris, who is famous for imbedded splints and for researches in the chemistry of the fluids of the body, with whom I had several talks, gave as a possible reason for the intolerance of the capsules and tolerance of the splints the following: "The screws are held or tolerated in the denser portions of bone that have the aid of the recuperative power of the periosteum, while the diploe or medullary portion, as that between the plates of the superior maxilla, having less reparative power, breaks down and the capsules are lost."

Referring to the casts passed among you for inspection, you will note that the Brooks case is not ideal by any means, but the tooth is firm and serviceable, looks well in the mouth, and I merely show this cast of an imperfect case to prove the toleration of the hard tissues of the jaw in the implantation of natural teeth, and to show how they will cling and be retained as useful, comfortable teeth, even under the most adverse conditions, and at an age past adult life, namely, sixty-two. This socket drilled into the process of the upper maxilla has held a natural planted tooth over a period of fourteen years, and it is a serviceable organ to-day, with every appearance of remaining many years to come.

**CLOSE SHAVING.**—A writer in the *Medical Classics* looked through a microscope at a closely shaved face, and he reports that the skin resembled a piece of raw beef. "To make the skin perfectly smooth requires," he says, "not only the removal of the hair, but also a portion of the cuticle, and a close shave means the removal of a layer of skin all around. The blood-vessels thus exposed are not visible to the eye, but under the microscope each little quivering mouth holding a minute blood drop protests against such treatment. The nerve tips are also uncovered, and the pores are left unprotected, which makes the skin tender and unhealthy. This sudden exposure of inner layer of the skin renders a person liable to have colds, hoarseness and sore throat."

**EPILEPSY AND BIBLICAL VISIONS.**—In "Theories, Apparitions and Visions, relating to Biblical History and the Koran," Sir Thomas Lauder Bruton, the great medical authority, declares that in his opinion the seers of Biblical history were afflicted with nervous diseases, notably epilepsy. He states that sodium salicylate used for rheumatism often produces the same effect. He declares that certain forms of headache produce peculiar zigzag apparitions, which, in conjunction with excessive imaginations, were doubtless accountable for the fairies seen. This zigzag appearance is to be found in Dore's drawings and in the spirits of Dante. In Sir Thomas' opinion, "if Mohammed had been dosed with bromid of potassium when he had his visions, there would have been no Koran and no Mohammedanism."

## Digests.

METHOD IN WHICH NITRATE OF SILVER AFFECTS CARIOUS DENTIN. By Dr. Josef Szabó, Budapest. *Osterreichisch-ungarische Vierteljahrsschrift für Zahnheilkunde*, January, 1902. Reviewed for the May *International* by Dr. W. H. Potter. The author gives a very carefully prepared history of the uses of nitrate of silver in dental practice, beginning with the year 1846, and quotes leading exponents of the drug. He then comes to the question, What is its penetration power, and what is its chemical action on the fibrillæ? As to this power, there has been considerable divergence of opinion, some holding that it could not penetrate into the tubules, and others that this power was so great that the pulp might be endangered. Investigations as to the penetrating power of nitrate of silver have heretofore been made upon extracted teeth. The author, however, considers that they may react differently with the drug than teeth which are in the mouth. He therefore makes his experiments upon living teeth. A right and a left lower first molar each having a crown cavity are selected. The rubber dam is adjusted, and the cavities are dried out and excavated as far as possible. The nitrate of silver is then applied in different forms, viz., in powder, as a ten, twenty, thirty and forty per cent solution. The applications are made five, fifteen, eighteen, and twenty-five times. After the experiment the tooth is extracted and examined under the microscope. Pictures are given of some of these examinations, and show clearly the penetration of the drug when in contact with living dentin. "Without regard to the concentration or method of use, we find the same result. The carious dentinal tubes are filled up to a certain depth with a coarsely lumped contents." According to these observations the tubules are affected only to a certain depth; when this is reached further applications of the drug cannot force it deeper. The infiltrated dentin layer was about one-half milimetre thick. A deeper penetration could never be observed, even though the most diverse solutions were used.

In regard to the question as to how nitrate of silver acts upon the contents of the dentinal tubules, this explanation is given: "The living albumin is changed, under the action of the silver salt, to

dead albumin. The plasma is changed from a soluble condition to a solid mass. The albumin unites itself in the form of a precipitate with the metal of the silver salt. The finely granular albuminate of silver is easily recognizable under the microscope, and shows its characteristic properties. Under the action of light it becomes dark, then black and insoluble." The author, in concluding, says that he must agree with Walkhoff that nitrate of silver has a relatively slight power of penetration and does not act deeply enough to endanger the vitality of the fibrillæ.

\* \* \*

COTTON-WOOL ADMINISTRATION IN A CASE OF A SWALLOWED PLATE. Dr. J. Jameson Johnston, of the Royal City of Dublin Hospital, describes in the *Medical Press* an interesting case in which cotton-wool was given internally and with complete success to accomplish the removal of a denture from the small intestine. The patient, a man aged 20, swallowed his plate while bathing. He was conscious of the plate being stuck in the back of his throat, but had no difficulty in breathing. On being struck sharply on the back a dyspneic attack ensued, due to the plate changing its position; further slapping relieved the breathing, but he suffered great pain. Dr. Flood saw him and advised his removal to hospital. During the journey the jolting of the car appears to have caused the plate to go further down the esophagus, and Dr. Johnson found him, soon after his admission to hospital, in a very exhausted condition, pale, and in a cold perspiration. Breathing was not difficult, but he complained of severe pain, which he referred to the lower end of the sternum. Digital exploration and palpation of the neck failed to reveal anything abnormal. Swallowing a teaspoonful of milk caused great pain. A sponge probang was passed without any appreciable resistance into his stomach. The passage of the instrument was evidently painful, and the probang returned smeared with bright blood. The relief was so marked and maintained as to suggest that the plate had been passed into the stomach. The patient was quite positive that the plate had been swallowed and had not been ejected. Doses of 5 m of liq. morph. mur. were given every three hours, with the twofold purpose of allaying the pain and minimizing peristalsis. Much pain was experienced on Friday night, all day Saturday and throughout Saturday night, ceasing early on Sunday morning. The

pains were paroxysmal in character, and occasionally were violent. On Saturday there was a distinctly tender spot approximately over the pylorus. Dr. Johnston was unable to discover any signs of gastric peristalsis, owing to the rigidity of the abdominal wall during the attacks. A wax model of the plate was supplied on Monday, its shape and the nature of its clasp suggesting the question of gastrotomy. However, it was decided to wait and administer cotton-wool. This was given in thinly teased-out layers in bread and butter sandwiches. The patient was carefully examined by means of the Röntgen rays, by Dr. E. J. Watson, but no indications of the plate were seen, although the screen showed most distinctly metallic buckles and buttons through the whole thickness of the body. The only explanation would seem to be that the plate was in the small intestine and the peristalsis prevented the plate remaining sufficiently long in one position to be recognised. The following Friday, *i.e.*, a week after his admission, paroxysmal pains again ensued, referred this time to the right iliac fossa. Palpation over the ileo-cæcal valve caused the patient to wince from pain. The pains were of shorter duration than previously and not so severe.

About 3ss. of liquorice powder was administered, and next morning (Saturday) a motion was passed, revealing nothing. Three hours later his bowels were again moved quite painlessly, and the plate was seen enveloped in an admixture of cotton wool and *faeces*; the cotton wool was firmly entangled around the large clasp on the right side of the plate, but was easily removed from the other parts. The patient left the hospital next day, and has been perfectly well ever since.

The plate is described as weighing 95 grains and measuring 4 centimeters long by  $1\frac{1}{2}$  wide, carrying a right upper lateral and cuspid, with a long clasp for the right first bicuspid and a short one for the left first bicuspid. The plate was presumably made of gold or dental alloy, though Dr. Johnston does not mention this; but in the heading it is described as a metallic denture.

The history of the case seems to show that the plate at first stuck in the back of the pharynx, and changed its position owing to the slaps on the back, pressing on the glottis and causing great difficulty of breathing, with cyanosis and prominent eyeballs. The dyspnea was relieved by further slapping, the plate slipping down

into the esophagus and remaining there until pushed by the pro-bang into the stomach, where it remained until the Sunday morning. The passage through the small intestine lasted until the following Friday. The paroxysmal pain in the ileo-cæcal region points to its passage through the ileo-cæcal valve, and the laxative which was given hastened the passage through the large intestine, which was terminated next morning.

Dr. Johnson concluded his description of this instructive case by remarking that the treatment adopted was not original, but was not as widely known and appreciated as its merits entitle it to be.

\* \* \*

**SURFACE MARKINGS UPON THE TEETH.** By J. J. Madden, D.D.S., Buffalo. Read before the Annual Convention at Rochester. Nature's method of construction of the teeth may be read in the plainest language by studying the markings upon them. Each line of calcification may be said to represent a chapter in her book. When her building process is suspended through disease the point is marked in such a manner that we are able to tell, by the markings upon the enamel, at just what time the trouble occurred. When the work has gone on without interruption the markings present themselves in the form of grooves, ridges, sulci, and fossæ. Each of them give us an invaluable guide in the carrying out of operations upon the teeth, and if their true significance is not considered our success is placed in jeopardy.

The grooves are of two varieties, viz., *developmental* and *supplemental*. The first mark the coalescence of the lobes or plates of enamel, while the latter are the finer ones found upon the surface of the molars in particular. The knowledge of the exact location of the developmental grooves is very important, for the reason that the tooth is less resistant to the onslaught of decay in these grooves, and because the enamel is not as heavy at these points; and again, they are found to be deep, sometimes taking on the form of fissures.

The ridges are usually found forming the boundaries of the crowns of the teeth, and are divided into marginal, triangular, oblique, and transverse. The enamel is heavy, and in turn they encroach upon the body of the dentin of the tooth.

The sulci and fossæ are found upon the occlusal surface of the bicuspid and molars. The locations of these normal surface markings should not be lost sight of, nor the very important part they

play in the scientific preparation of the cavity for filling. I feel safe in saying, that if we would pay more attention to the construction of the incisors, the chisel would be brought into use in many more cases, and many successes would supplant our failures. Have we not seen case after case where the lingual surface has been used to form the floor of the cavity, and a short time afterward we could see signs of infiltration, and a breaking down of the marginal ridge? This knowledge of the topographical markings is just as essential to us as the marks upon the body are to the surgeon.

The grooves are, metaphorically speaking, the highway to our offices. From the time of the eruption of the first molars until the third molars are in place it is a battle to keep the surfaces intact. A point not to be lost sight of is the deep penetration of decay that we often find upon opening into the grooves and sulci, forming, as they do, inviting places for the growth and development of bacteria. The ridges upon the teeth play a very important part in the outlining of the cavity, on account of their seeming solidity and firmness, but it behooves us to decide in a very careful manner before we use them as a supporting base for filling material. I have in mind the marginal ridges of the bicuspid and molars in connection with the filling and finishing of mesial and distal cavities. Nowhere is the knight of the chisel more needed than in the preparation of these cavities where decay has weakened the grinding surface. Picture with me, if you will, the well-defined marginal ridges on the bicuspid and molars, inclosing a concave surface broken by grooves and ridges, and these taking the force of occlusion and mastication. It has seemed to me that it would be a very small cavity with easy means of access that should be confined to the one surface, mesial or distal. I have observed that when decay has attacked the mesial or distal surface of a bicuspid disintegration is likely to form a union with the mesial or distal pits, as the case may be. Many cases might be cited, tending to show how important a rôle the ridges play under the stress of mastication, and again, when they have become undermined through decay they contain the poorest material for supporting a filling.

Another group or set of markings that we meet are those formed during calcification. How beautifully and indelibly written is the story of the calcification of the teeth! From the fifteenth or seventeenth week of embryonic life until the twentieth or twenty-first

year later nature is busy building the sentinels of the tongue. How jealous she is of her work and time is seen when disease endangers the health of the child. She stops her work for a time, and when she returns we know of her absence by the transverse lines and depressions seen upon the teeth, and all the calcium-containing foods known to science could not repair the loss. We ought to have clearly defined in our minds, in the majority of cases, the different periods of calcification of the permanent teeth, beginning with the first molar at twenty-five or thirty weeks of embryonic life to the completion of the crowns of the third molars between eleven and twelve years.

Eruptive diseases during the early life of the individual, say between one and one-half and five years, often leave their marks upon the anterior and bicuspid teeth, and constitute dyscrasiæ. Again, tendencies are inherited. A number of years ago a prominent English writer laid great stress upon the effects of inherited syphilis upon the teeth, pointing out the peculiar concentric shape of the edges of incisors, together with the peculiar ashen hue of the enamel and the general shape and outline of the tooth. We should be very careful, however, on meeting with teeth approaching this description, as markings of this character might be confused with the three tubercles forming the first points of calcification. If such a diseased condition has been inherited, other tissues will show better evidence of the fact than the teeth, while the latter will help to confirm the diagnosis.

A most peculiar and compensative condition is sometimes seen upon the occlusal surface of the first molars when the whole surface presents an unformed condition; the dentin is of a hard and firm nature, and very resistant to decay. I recall two or three young patients with the first molars in such condition, and it is surprising to see how the dentin serves the office of the enamel. With the anterior teeth, pigment matter is readily deposited in the depression, and often presents an unsightly appearance. I have seen cases in which the places have been filled and operated upon, when the patient was from nine to fourteen or fifteen years old. I believe we should not be hasty in operating; rather cleanse the surface, using bleaching preparations to remove the pigment material, and polishing the surface occasionally with a fine stone. By removing the superficial surface of the enamel we may produce an effect tending to give a smooth appearance to the surface. I have one patient that

had a very marked condition of this character, due to imperfect calcification, and in the last four and one-half or five years the improvement, due to the occasional touching and polishing of the surface, is such that all concerned are much pleased and gratified.

Markings due to pigment matter laid down in the tissue constitute an abnormal and rare condition in the teeth of man, while in some of the lower animals it is characteristic. In man it is not a very easy matter to decide whether the pigment matter has actually infiltrated the surface or the material was laid down, but I have observed that in the latter case the places affected are favorable points for decay to attack the tooth. We have all seen the peculiar brown and white spots upon the teeth, and noticed how they dissolve under the pressure of an instrument. They cause operators considerable trouble to obliterate them.

The last variety of markings are those caused by external agencies. How many patients have told us the same old story of taking tincture of iron, and all sorts of drugs have been charged with staining and marking the enamel. We must acknowledge that some physicians still retain their liking for the old-fashioned tincture of iron, and they have good reason, but they should instruct the patient as to the deleterious action of the acid solution upon tooth-structure. I have seen peculiar cases where patients have stated that their teeth were in almost perfect condition before they used iron and Peruvian bark. The condition I saw was something new; the markings while separate covered the anterior and bicuspid teeth, some being round and others concentric and of divers forms. I am at a loss to account for the peculiar disposition of the markings, and trust some of those present may further enlighten me.

The most common markings that we find, due of course to a diseased condition, are those showing the presence of defects in the form of opaque spots near the cervical line and on the different surfaces. They indicate that chemical change is going on, and the enamel is breaking down, allowing the entrance of microorganisms into the dentin.

For some time I have made use of the 3 per cent and 25 per cent solutions of pyrozone as a means of finding the extent of the chemical action upon the enamel near the cervical border, and with satisfaction in that some of the markings due to decay became far better defined under the action of the oxygen.—*Cosmos, April, 1902.*

**BLEACHING OF ENAMEL AND DENTIN.** By Joseph Head, D.D.S., Philadelphia. Read before the Central Dental Society of Northern New Jersey, November, 1901. The necessity for bleaching tooth substance is always to be considered from two aspects: the esthetic and the hygienic. When in times past the discoloration occasioned by a shining gold filling was considered a mark of beauty and of aristocracy, lesser stains on the enamel were unnoticed, but with the advent of porcelain fillings the necessity for removing discolorations in dentin and enamel become a crying necessity. Yet great as this esthetic necessity is, the greatest necessity of all is cleanliness and hygiene, for when the enamel is infiltrated with germs of decay, even though it appears hard and smooth to the instrument, the life of that enamel is on the ebb. Microscopic slides of Miller and Choquet show this only too plainly, and fillings placed in such enamel margins are from the start doomed to failure.

When a pulp is removed from a tooth and the cavity is filled without proper antiseptic treatment of the dentin, and that dentin becomes discolored, it is a subject for serious consideration, if such decomposition may not have a harmful effect upon the cementum. Even latent decay is a serious menace, and we should never lose sight of the fact that any bacterial stain in enamel or dentin may need only a chance stimulus under favorable conditions to become the forerunner of a cavity. These stains may be removed by bleaching and polishing, yet as bleaching is sterilization to extermination, it is more effective than polishing, which in most instances removes only the outer part of the bacterial colony.

The difficulty of bleaching a tooth internally by medicaments applied to the dentin is inversely proportional to the necessity, for that half of the crown adjacent to the cutting edge of a discolored tooth is the portion esthetically most important to bleach, and as before noted, it is just that portion which the bleaching fluid cannot easily reach through the dentin. How often in times past have we been able to bleach the cervical half of a crown, while the other half defied our utmost endeavors, because the dentin tapered to the thinness of paper long before the cutting edge was reached. Therefore it is evident that numerous failures will continue unless stained enamel can be bleached by external applications.

Such a method of bleaching enamel was employed by me over two

years ago in an endeavor to restore the color of teeth in which porcelain inlays were to be placed, but since that time the same method has been successfully used to remove permanent stains in the apparently sound enamel of teeth with living pulps, and to remove the germs of general superficial decay where fillings heretofore had proved unable to withstand the attacks of the bacteria.

*Cases from Practice.*—I have in mind one patient the necks of whose teeth were literally covered by superficial decay. The gums were extremely sensitive; fillings had to be replaced every six months, each time larger than before; mouth washes proved valuable for the soft tissues, but from their lack of penetrating power were useless in retarding the enamel decay. It took five visits to thoroughly sterilize all of his teeth, when the enamel looked normal, the gums became healthy, and to my surprise, the patient volunteered the information that the teeth were much less sensitive. This was especially interesting, as I had thought the method might possess the drawback of making the pulps temporarily more sensitive.

Another patient came to me with his teeth covered with the well-known green stain. Ordinary polishing and brushing proved useless, as the enamel had been pock-marked by measles during childhood. We all know what esthetic trouble these pock-marked teeth give us, not so much from the inequality, but from the stains at the bottom of the depressions that it seems impossible to remove. A single treatment to the central, lateral and cuspid made the stain melt from sight, the enamel became normal in color, and by the use of brushes and mouth washes remained so.

*Method of Bleaching with Pyrozone.*—Peroxid of hydrogen and peroxid of sodium when heated give off oxygen in great quantities. This nascent oxygen at the moment when it leaves the compound is most caustic, and therefore if we can liberate this gas directly on a tooth we shall be able to remove any organic stain. Either pyrozone, which is a 25 per cent solution of peroxid of hydrogen, or sodium dioxid can be used. These two materials seem equally powerful, but they are somewhat different in their actions, and would therefore better be described separately.

If the stained tooth is pulpless and the apical ends of the canals have been tightly sealed, the treatment should be as follows: Apply the rubber dam and tie one if not two ligatures around the neck, so that leakage is impossible. Let the rubber dam go slightly over

the nostrils of the patient to prevent the fumes of the nascent oxygen from irritating the air passages. Oil should be rubbed on the hands of the operator and on the face of the patient. The tooth should be dried internally and externally. Cotton soaked in pyrozone should be packed in the canal and a hot ball burnisher, such as is used in plastic work, should be placed against the cotton, so that the steam of the nascent oxygen will be driven through the tooth substance. After the cotton becomes dry it should be removed, and the tooth heated again internally with hot air, when the process described above can be repeated several times. Finally, cotton soaked in pyrozone should be sealed in the canal with hard gutta-percha, so that any gas that is given off may by pressure be driven throughout the dental tubules.

Then we are ready for the second stage of the process. The enamel should be thoroughly dried with hot air blasts and heated instruments until the patient feels the heat of the tooth in the gum. This makes the oxygen within the tooth canal exert great pressure; then a piece of cotton soaked in pyrozone should be placed on the enamel, and a broad, hot instrument held against it, so that the steam shall be driven in from the outside. This should be continued until the cotton becomes dry, when the enamel should be ironed with a highly heated ball burnisher. This drives out the pyrozone that the enamel has soaked up, and in driving it out liberates the nascent oxygen within the enamel substance. The effect of this last-mentioned ironing is most marked and the stains can be seen to whiten perceptibly. This process can be repeated in its various stages as often as desirable, and when the patient leaves, fresh pyrozone should be sealed in the canal with gutta-percha, in order that the bleaching process may continue until the next visit. If finally there is a slight stain that the nascent oxygen will not remove, a strong solution of oxalic acid should be used in the same way. The oxalic acid is not only a powerful oxidizer of organic material, but will also change any iron stain to a colorless oxalate.

*Peroxid of Sodium Method.*—What has been said about the use of pyrozone, with a few cautions applies equally well to peroxid of sodium, as both bleach primarily by setting free nascent oxygen. The peroxid of sodium is most valuable where oil in the tooth is to be saponified, and it will therefore sometimes succeed where pyrozone fails; however, we must remember that when peroxid of

sodium touches the soft tissues it makes a deep burn, which pyrozone would not, and therefore great care should always be taken that the sodium dioxid does not escape from the protection of the rubber dam. When this compound is placed in hot water the oxygen is given off so rapidly that a distinct puff is heard, but when it is melted on ice a thick paste of the undischarged sodium dioxid can be obtained, which when placed upon the dried enamel and heated with a hot instrument will safely give off a tremendous quantity of nascent oxygen. This oxygen, as previously stated, will bleach the enamel of a tooth where the pulp is alive. When peroxid of sodium has been used it should be carefully washed off with water and neutralized with a weak acid. Before the rubber dam is removed, always be sure that none is left to burn the mouth. For the same reason it is also dangerous to seal it up in a tooth canal unless the utmost precautions are taken against its escape.

Dr. Miller has, I believe, noted that concentrated peroxid of hydrogen under certain conditions may attack the organic matrix that holds the enamel rods together. This is a warning that should be noted and considered. But in spite of this warning, the good results obtained by me might be explained, even though Dr. Miller's observations were generally true. Enamel that is sterilized of its infecting bacteria is better able to preserve its integrity by the use of antiseptic washes, even though the matrix may have been slightly weakened by the bleaching agent, than infected enamel, the matrix of which is being constantly thinned by bacteria that lie too deep for an ordinary wash to reach. But whether this method even theoretically injures the enamel is a subject for future research. This much, however, is sure—the method presented to-night has permanently bleached stained enamel and that enamel has kept its normal color and integrity for over two years.—*Items, March, 1902.*

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#### SEVEN CONDITIONS THAT BRING ABOUT OPPORTUNITIES FOR THE FAILURE OF DENTAL OPERATIONS.

By Dr. E. K. Wedelstaedt, St. Paul. Read before the Minnesota State Dental Association, 1901. The results of the investigations of the cause of decay of the human teeth, to which our attention has been called by the researches of Drs. Black and Williams, have generally been accepted by all intelligent dentists. We now know definitely when a cavity in a tooth is prepared and filled without

altering the conditions which led to the first decay that it is but a question of time before recurrence of decay takes place. Where there is not an alteration in the conditions which led to the disease an opportunity is left. In such cases it is simply useless to do the work, for failure is but a question of time; this applies to surgical as well as to dental operations. The question can well be asked, what is meant by this term "opportunity"? I will answer this by saying that it is one of a number of conditions to which I now invite your consideration. My remarks will deal principally with the proximal surfaces of teeth where fillings have been made, and where it is supposed that there is an adjoining tooth in position. Cavity preparation will not be considered, for all should now know what constitutes correct cavity preparation.

What is an opportunity? It is 1st. A margin which is not tight, i. e., an opening between the filling and the cavo-enamel margin. 2d. An overhanging gingival margin of filling material which is or is not protected by a healthy gum septum. 3d. A rough margin. 4th. A margin which has been trimmed too much. 5th. Retention centers. 6th. Noncontouring of the interproximal space, and 7th. Any place around a filling or margin that will catch and hold the food.

1st. A margin which is not tight. I believe that 90 per cent of the fillings which are made in the proximal surfaces of bicuspid and molars with cohesive gold do not have tight margins. This condition is caused by the methods used in packing gold. You may be somewhat surprised if you will observe the way gold springs away from the margin while you are packing it into the cavities in the mesial or distal surfaces of incisors. If we look for the cause of this springing away it can be found in the method employed in placing and malleting the filling material. Much care should be exercised in placing properly and condensing thoroughly each piece as it is inserted. If the eyes are used as they should be, they will quickly aid in overcoming the causes which lead to leaving ditches at some portion of our margins. Where cohesive gold is used for filling cavities in the proximal surfaces of bicuspid and molars, unusual care must be exercised in placing the filling material or an opportunity is left which later on leads to failure.

2d. An overhanging gingival margin of filling material which is or is not protected by a healthy gum septum. This is simply a shelf on the filling which serves to retain or hold food which under-

goes changes in its composition, with the inevitable result of having recurrence of decay take place. Where a margin is tight and not covered with a healthy gum septum, but has a ledge of filling material at the gingiva, it is but a question of a very short time before there is a cavity of decay beside that margin. Where, however, this overhanging ledge of filling material is protected by a healthy gum septum it is simply an opportunity that naturally tends to cause an irritation, which leads to the absorption of the gum in the interdental space and an unhealthy gum septum results. It is not alleged that absorption immediately takes place, for we all know that such conditions have existed for years and apparently little harm has been done, but they are conditions which bring about opportunities for evil, and should be done away with. And while on this subject let me impress upon your minds the necessity of removing these overhanging shelves of filling material, as they are conditions which lead to the undoing of our work. The fact that some of the manufacturers have, on the cards accompanying their alloys, the statement that it is not necessary to polish the amalgam fillings made from those alloys, is absolutely unworthy of any consideration. It is as necessary to polish amalgam fillings as it is those made of gold. Another thing, the fees charged by a number of men for amalgam work are so small that many men assert they cannot afford to polish the amalgam fillings they make. It is not the intention of your essayist to do otherwise than adhere strictly to the subject in hand, but for the benefit of those who make such assertions I desire to say that all intelligent men look with horror on those members in our profession who follow methods of the kind just described. As a rule, it is far more difficult to finish properly an amalgam filling than one made of any other material. It always takes me a longer time to finish an amalgam filling made in the proximal surface of a tooth that has an adjoining tooth in position than it does to prepare the cavity and make the filling. It does not make any difference whether the material used in filling a cavity is gold, amalgam or cement; it should be properly polished and in so far as possible all conditions that lead to opportunities should be done away with.

3d. A rough margin. Rough margins are frequently the result of carelessness in packing filling material against margins which have been either properly or improperly trimmed. This has a tend-

ency to break up the original marginal form and then it is practically impossible to so pack the filling material that a tight margin results.

4th. A margin which has been trimmed too much. If you will take a No. 1, a No. 1½ and a No. 2 sandpaper disc, and so hold them that you can look across their cutting surface, you may be a little surprised at the inequalities which you will find. In proportion as the coarseness of sandpaper discs is increased above No. 1, so in the same ratio is there an increase in the roughness and inequalities of their cutting surface. The same is also true regarding the cutting surface of polishing strips. These coarse discs and strips have a tendency to cut minute grooves and hollows in the tooth around the margins of our fillings. These grooves and hollows are unequal in their depth, consequently when the final polishing is completed an opportunity is left for the attachment of microorganisms. With this opportunity at hand the surface of that tooth is placed in a condition where it is but a question of time before recurrence of decay takes place. In finishing fillings made in the proximal surfaces of teeth it is a very common practice to see men, who should know better, run a flat file or a rotary disc completely between the teeth from the occlusal to the gingival margin. Where this practice is followed, not only is the point of contact on filling cut away, but a hollow is often left in the filling or in the gingival margin. Frequently the gingival margin itself is so reduced by this condition that an opportunity is created which also leads to the failure of our work. I am perfectly aware that there are those who still contend that the rotary disc is the most rapid means (and some assert the only method to employ) for the reduction of a filling, and I am perfectly willing to acknowledge that there is some truth regarding its being a rapid means. But from the amount of havoc and opportunities for recurrence created by its use I am amazed at the courage which so many have in deliberately publishing their convictions. It is our duty to study the conditions produced by the use of the rotary disc and to carefully compare these conditions with those which are obtained by more rational and scientific methods.

5th. Retention centers. Those who are interested in retention centers can gain much knowledge by reading Dr. Miller's essay in the *Cosmos* for April, 1900. It fully bears out the idea to which

attention was called by Dr. Black in 1891, that all cavities in the proximal surfaces of teeth must have their lingual and buccal margins extended past all contact with the adjoining tooth. I agree with Dr. Ottolengui, that all fillings should have a looking-glass finish. They should be free from pits and hollows, as these are simply "yeast ditches," as Dr. Searl has named them. The tendency of these pits is to assist in retaining food which will cause decay in the surface of the adjoining tooth if it has not already started. Since I wrote this a woman consulted me regarding the condition of the distal surface of the upper left second molar. She said that after each meal it was necessary to remove the food from the interproximal space, and this could be accomplished only with much difficulty. The mesio-occlusal surface of the upper left third molar contained an amalgam filling which to all appearances had been nicely polished, that is, the portion of the amalgam that was reflected in the mirror was very bright. When I attempted to pass an instrument through the interproximal space it struck some obstacle. On examining the condition of the filling with a little more care I found that that part of it which could be reached readily with a rotary disc had been polished, but the mesial surface had not been polished. Space between the teeth was obtained. A cavity of decay was found in the distal surface of the second molar and on the face of the mesial surface of amalgam were three distinct ditches. These ditches ran across the face of the amalgam from the lingual toward the buccal, and they were not less than .5 millimeters deep (estimated.) The cavity of decay in the distal surface of the second molar was directly opposite these ditches. The patient asked, "Why did that tooth decay?" The condition of the mesial surface of the amalgam filling was pointed out to her and she quickly understood what was meant by the term "retention centers," and how those ditches could hold the food. The man who originally made this work is well and favorably known to all of us. He knows full well or he should know what harm untrimmed and unpolished amalgam fillings are likely to do. The fact that the fillings in the locality just described are so difficult to finish on account of their being so inaccessible is no excuse for leaving a filling in this condition.

My object in calling your attention to this particular case is twofold. 1st It at once fixes firmly in your minds what a retention center is and the harm it can do, and 2d. I would most respectfully

suggest, where there are a number of operations to make, that everybody make it a rule to finish completely each operation before doing any other work for the patient. For years I have followed this method, but notwithstanding the fact that I have impressed on the minds of my patients the necessity of having these fillings polished, there must be a couple of hundred of them remaining unpolished. The patient is wholly to blame for this state of affairs. We cannot be responsible for dereliction on the part of our patients, but I do think that we can very materially alter the state of affairs that exists at present by finishing completely all work before commencing any other operations.

6th. Noncontouring of the interproximal space. If the proximal surface of a filling is not contoured properly the interproximal space is not contoured as it should be. The result is that food is held in that space and is a menace to the stability of the rest of the teeth. The proximal surface of a filling should be so trimmed that it slopes in all directions from the contact point. It will then be impossible for food to be retained in that space. Not until 1897 was there anything said about the importance of giving the interproximal space a proper contour. In that year Dr. Black in a very able essay called our attention to the importance and the necessity for finishing all operations on the proximal surfaces in such a manner that the interproximal space should be properly contoured. Since 1897 less than half a dozen writers have seemed to think this subject worthy of their attention. As we observe conditions we quickly realize what an alteration in them does for our patients, and the more time we spend in studying what constitutes a proper contour for the interproximal space, the more impressed we are with the importance of this subject. Others are also beginning to recognize the importance of this matter. In the DENTAL DIGEST for April, 1901, can be found an illustrated essay by Dr. J. R. Clayton of Shelbyville, Ind. The subject is "A Study of the Interdental Space, Loss and Restoration." The ideas presented are worthy of much thought and still more study, and if these are given Dr. Clayton's essay, the views of some persons regarding the importance of properly contouring the interproximal space may undergo a radical change. I am of the opinion that where the contour of the interproximal space is ignored it is in many cases the direct cause of disease. If it is not a direct cause, it surely aids and assists disease. These ill-trimmed

spaces are a greater factor, at least so I believe, in producing and aiding disease than we at present recognize or are willing to take into consideration. The food crowds into these spaces, is held there and undergoes changes in its composition. This keeps the interproximal space in an unhygienic condition. Such conditions always invite disease. As our knowledge of bacteriology is increased, so also will our ideas of this subject change for the better and we will more fully recognize what an opportunity for evil a noncontoured interproximal space is. I cannot emphasize too strongly the importance of studying this subject with much more care than has ever been given it in the past. It is impossible for us to advance beyond our present narrow limits unless we begin to consider this subject as it should be considered and to study the conditions as they should be studied.

7th. Any place around a filling which will catch and hold the food. As our knowledge of the conditions which lead to the failure of our work has been developed, so has our knowledge of the importance of trimming properly all fillings and cavity margins been increased. A man of intelligence who has made a study of the conditions as they have been developed for our consideration can now only examine the condition of the cavity margins after filling to tell just about how long that tooth will remain as it is. Such a person merely watches an operator work for a few moments to know definitely whether or not tight margins are being made. He has but to examine the cavity margins prior to placing the filling material in order to be in a position to speak authoritatively regarding the possibilities of making a good operation in that particular case. Now with our knowledge of the conditions developed to this extent it should be the aim of all in our profession to become very familiar with this knowledge and these conditions, so that no opportunities for holding food are ever left around the margins of our cavities. All should familiarize themselves with the conditions that lead to the failure of our work, and it is the duty of all to obtain an intimate knowledge of those which do harm. Then they can be altered and done away with when the operations are made, and failures will not be so likely to take place.—*Review, April, 1902.*

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RESORPTION OF DENTAL STRUCTURES. By Otto E. Inglis, D.D.S., Philadelphia. The hard structures of the teeth are all subject under certain conditions to the action of certain cells,

known as giant cells, which remove them entirely or in part, there being nothing left of the part acted upon of the nature of decalcified structure such as occurs in caries. A resorbed root, for example, presents for examination a morbid condition, in which a portion of both cementum and dentin have been removed, leaving a more or less roughened but comparative plain surface, or deep, bay-like excavations with roughened edges, or a spiculated condition of the root end. The first of these phases of the condition seems dependent upon some form of pressure which is regularly maintained, as, for example, by a permanent successor to a deciduous tooth. The last two phases are seemingly the result of morbid processes set up in the soft tissues surrounding cementum or enamel, and which produce a soft structure apparently analogous to granulation tissue, by the contained cells of which the process is continued.

The removal of the deciduous teeth for the accommodation of their permanent successors and the bay-like resorption of enamel and dentin in permanent teeth are classed respectively as physiological and pathological processes, and seemingly are conditions widely different; but it is quite likely that the difference in the grades of irritation produced and which lead to the results are more apparent than real.

Another form of dental resorption occurs within the pulp-canal, when a similar grade of irritation is produced in the pulp either of a permanent or deciduous tooth. Again, granulation tissue (so called for want of better information) is produced and the dentinal wall of the pulp cavity is resorbed even to the extent of removal of the entire coronal dentin, with a consequent weakening of the enamel or the perforation of either enamel or cementum, or both at once.

In all cases of resorption examination may reveal the papilla-like overgrowth of the soft tissues existing either at the location of the bay of resorption on the outside of the root or crown, or within the tooth.

Examples of all these conditions exist or have been reported, and a summary of important cases may serve to further elucidate the principles involved. Deciduous tooth-crowns, after extraction for looseness, have been found to contain bay-like resorption of the crown dentin. In one extreme case the enamel of the crown of a cuspid alone remained intact. In still another case the coronal

dentin was largely resorbed and the tooth perforated laterally at the junction of the enamel and cementum, both having been slightly removed. In this case the tooth was seen *in situ*, and presented the appearance of a suffused tooth. When extracted the crown was seen to contain the resorbent organ in the place of the pulp. The removal of this restored the normal color of the tooth, and brought to light the neat round opening at the cervix. All are familiar with the fact that pressure of advancing permanent teeth produces resorption of the deciduous roots also; that when the pressure is upon the root end the root is regularly removed; when at the side one side is stripped off, as it were, by resorption, while when the pressure is lacking or only partial the tooth often remains *in situ* for years. This often occurs when the permanent laterals are lacking, and the permanent cuspids erupt anteriorly or posteriorly to the deciduous cuspids. Why in these cases the enamel of the permanent tooth is not affected by the resorbent organ is difficult of explanation, but it is not. Mr. Tomes explains resorption of deciduous roots upon the theory of a vital process, or a sort of predestination of tissues, supporting his opinion by the fact that tooth roots may resorb, leaving perfect bony sockets before their successors are ready to erupt. No doubt developmental tendencies are vital processes and must be considered in connection with associated destructions.

There are, however, numerous instances of resorption of permanent roots after the manner of the deciduous roots. The resorption in these cases occurs at the pressure point. A case in point is that of an upper third molar, which after extraction was found minus its buccal roots. Search revealed a supernumerary molar, the crown of which exactly fitted the area of resorption upon the end of the buccal roots.

The resorption of permanent roots presents the peculiar bays or spiculated conditions previously described. The bays may be localized, and single or multiple, but all are probably due to aseptic irritation, with the possible exception of cases due to chronic abscess, and in these I believe that the resorption occurs during a temporary lull in pus formation. I have no doubt that it occurs from the aforesaid granulation tissue, which can touch a root only when it is capable of repairing the loss of its substance as fast as pus germs break it down. Whether the giant cells in granulation tissue can

act upon tooth-substance while pus is present seems doubtful when the restraining action of pus formation upon resorption of deciduous teeth is considered.

Other specific causes of resorption of permanent roots are plantations, protruding root-fillings, protruding broaches, calculus, chronic pericemental irritations, such as are produced by chronic looseness which really produces pericemental overwork. In some cases there seems to be no explanation of the causes of the resorption of a number of the roots of the permanent teeth of one individual, though no doubt some form of irritation is present.

Impacted teeth, a cuspid for example, may have their enamel and underlying dentin resorbed, the proof of resorbent action lying in the fact that the said tooth was removed before eruption. A very peculiar case of resorption was recently exhibited by Dr. A. P. Fellows, at a meeting of the Academy of Stomatology of Philadelphia. A central incisor taken from the mouth of an elderly lady exhibited a resorption of the entire apical half of the root. The remaining half was hollowed out by resorbent action, the cementum being intact. The location of the original pulp canal was occupied by a column of secondary dentin, which had proven more resistant of resorption than the normal dentin.—*Stomatologist, April, 1902.*

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ORTHODONTIA AND ITS RELATION TO TEMPERAMENT. By Eben M. Flagg, D.D.S., Philadelphia. Read before the Southern Dental Society of New Jersey, March 19, 1902. The increasing importance of the science of orthodontia prompts me to put forward a few ideas in its relation to temperament, in order to show the necessity of making our operations harmonize with those individual peculiarities which would characterize the patient, presuming his or her denture to have erupted with normal occlusion, and at the outset I cannot too strongly impress upon you the necessity of always having at hand models of normal mouths for constant reference and study. The model of a normal mouth seems to be one of the rarest possessions of a dental establishment, and yet as there can be no effective study of pathology without first a thorough knowledge of physiology, so any attempt to correct oral deformity without first being well disciplined in a knowledge of correct dental occlusion must end in dissatisfaction to the operator and probable mutilation to the patient, one species of deformity

merely being replaced by another, and all because the operator had not appreciated the fact that there is not an elevation nor a depression throughout the whole denture, upper or lower, that has not its corresponding counterpart made to fit into it and no other.

*Errors of Extraction.*—When a patient presents for an operation in orthodontia, what has generally been the first consideration in the case? Almost invariably it has been, "Let us see what teeth we can extract in order to make room." I repeat, "to make room," for that has been the usual expression, and the making of room has really been only the decrease of room. Dental arches already too much narrowed for speech, beauty or mastication have thus generally been corrected (?) by making them still narrower, and facial contours already too diminutive have thus been restored (?) by being made still more diminutive. In this matter we as dentists are not altogether to blame. We have worked according to our light, which has been so dim heretofore that we did not see what far-reaching results could come of an operation which seemed to be confined merely to the teeth. Now, however, we see that the basis of our etiology is being shifted, and if I am anything of a prophet, I predict that "crooked teeth" will soon be demonstrated to be nothing more than an outward and visible sign of an inward and constitutional disturbance; that the face is not pinched and deformed because the teeth are irregular, but an antecedent lack of development in the face has been the cause and not the effect of the oral deformity.

*Etiological Factors in Irregularities.*—The human head and face in their mechanical construction may be likened to a series of arches. The brain cavity from its shape is made so as to resist enormous external pressure, not only from above and the sides, but also from below, so any undue pressure upon the brain cavity in order to induce morphological changes must come from within rather than without. During adult life such pressure results in apoplexy, and cerebral engorgement is almost sure to produce death. The abnormally increased blood supply brings about a strangulation, from which the patient may or may not recover. Such, however, is not the case with very young patients. With them cerebral strain may cause an undue enlargement of the brain cavity, the bones of the head at a very early age being more yielding, and no part of the human system may preponderate except to the detriment of some other part.

Let us see what part or parts are most likely to be impaired by the condition which we are just considering. The abnormal flow of blood to the young brain that is sure to be occasioned by severe mental tasks, overexcitement, late hours, or errors in diet, must be felt mostly at the cerebrum, since that is the seat of intellectual function, and it is this portion of the brain which is situated just above the external bones of the face. Now, the anterior portion of the floor of the cerebral cavity seems to be more scale-like or squamous than any other portion. It has not the dense double layers that the parietal, frontal and occipital portions have; thus an undue pressure would be more likely to make the anterior portion of the floor of the cerebral cavity yield. So much for the dynamics of the case.

Outside of dynamical considerations, we must not lose sight of our former proposition, that an unduly excited part, when it does not succumb to the excitement, preponderates to the detriment of some other part, just as a growing tumor starves surrounding tissues, and an abnormally increased blood supply at any given part, while causing defective development even at a distance from a point of observation, does still more mischief at points contiguous, in that to the general weakening is superadded the dynamic influence already noted. It is difficult to say just at what age this train of evils may have had its origin, whether in the tender years of childhood, or through maternal impression *in utero*, but of one thing we may be pretty certain, that the cause of degeneration, as I have stated it, is in accordance of well known rules of pathology, and does much to account for the puny, undeveloped faces of those patients who come to us for treatment of oral deformities.

The arches of the cranium having been considered, let us now consider the arches of the face; and there are many of them, since anything constructed to resist external pressure must take the form of an arch. There are the convolutions of the turbinated bones, the dome of the antrum, the arches of the superior maxillæ, palatal and dental, all of which are constructed to best resist external pressure, with a minimum of material occupied in their construction; besides we have to consider the nasal septum, which is braced above and below by what appear to serve as two keystones, namely, the crest of the ethmoid and the wedge of the former where it fits in between the palatal bones; but with the pressure downward

from above, which I have mentioned, combined with the starved condition of the upper face resulting from defective blood supply and the constant hammering of the inferior maxillary from below, these keystones often prove of no avail; the septum becomes deflected; the vault of the hard palate narrowed and pointed upward; the teeth thrown into irregularities or thrust forward, the lower jaw protruded or undershot; all the horrors of mouth-breathing inaugurated, and adenoid growths alternate with rhinitis and nasal catarrh. I have not time to elaborate this matter here, but to those who would see the details of the process scientifically put forth, I would recommend them to read an article on deflected and

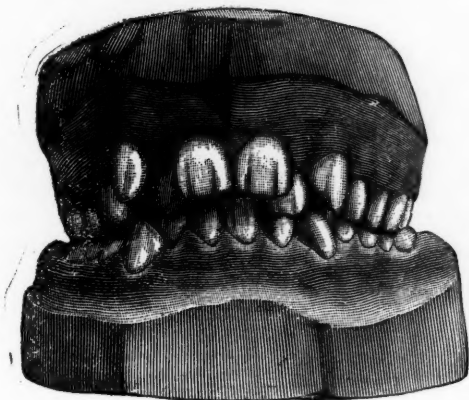


Fig. 1.

deformed nasal septa by Nelson M. Black, M.D., and published in *American Medicine*, under date of February 15, 1902, for it is one with which every orthodontist should make himself familiar.

*Thumb-Sucking.* If our course of reasoning up to the present time has been correct, it will be acknowledged that the lower jaw is thus the last link in a long chain of deformities. In reaching for an occlusion to the narrowed superior denture, it is often thrust forward, but generally pulled backward by the patient, and as this backward pull is irksome, the suffering child seeks to aid it by thrusting the thumb into the mouth and using the upper incisors as a fulcrum, thus assisting the lower jaw to its backward position. Needless to say, this thumb-sucking aggravates the deformity. In

case the lower incisors bear well against one another, then the arch will not yield and the lower jaw is carried back bodily, but if the thumb-sucking takes place at an age when the lower arch is not well braced, then the lower incisors are forced so far backward that they will fall well behind the cuspids, and it is easy to decide whether it is the right thumb or the left thumb which has been sucked by noting on which side the displacement of the incisors is greater. In the models which I now pass around, it is the right thumb which has been sucked. (Figs. 1 and 2.)

In reducing the deformity our first care is to see that the cause is removed. The child must be relieved of all mental strain, and its

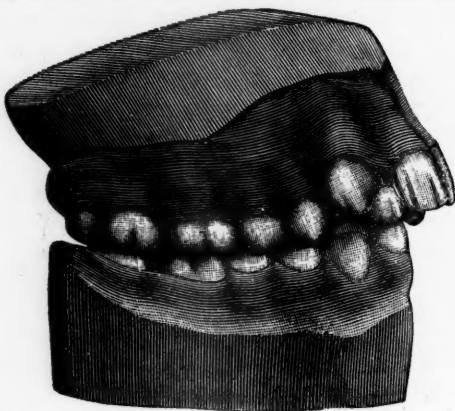


Fig. 2.

general system carefully restored by bathing, massage, exercise, etc., while one of the distorted dental arches must be restored by mechanico-surgical means. The lower one is preferably the first to be corrected.

I will not take up your time with a consideration of mechanism, as I wish to call attention to the philosophic bearings of this question rather than the mechanical, and most of the members of this society are doubtless familiar with all the mechanical contrivances in vogue for the reduction of these deformities. What I wish is to lay particular stress upon this point that, in restoring the face and jaws to beauty and usefulness, we are to consider carefully the kind of arch to be obtained in conformity with the temperament of the

patient, and not to think that any one curve or shape of arch is ideal to all cases.

*Lymphatic Temperament.* In the matter of the lymphatic temperament there is not much to be said. Where it predominates the patient is not often afflicted with dental irregularities, but I have noticed a peculiar condition in the lymphatico-nervous patient. The signs of this temperament as given by Prof. J. Foster Flag are: "Average size. Less than average osseous and muscular, but more than average contour development. Complexion, dark or light, but generally devoid of freshness or coloring. Cheeks, inclined to be full, prominent, rounded. Forehead, broad and high; jaws, average; chin, small, well formed. Hair, medium in color, but straight or at most slightly wavy, beard sometimes almost wanting. Eyebrows, not marked nor arched. Mouth, average or small; lips, fairly full. Nose, average, somewhat decided in contour. Color and structure of teeth, grayish blue, soft and frequently quite sensitive. Size and form of teeth, average or less than average size, shapely with rounded arch." The peculiarity of the deformity that I have noticed in this temperament is that the teeth instead of being overcrowded are often widely separated, which to my mind constitutes a deformity quite as pronounced as where the teeth are crowded and overlapped. As nothing has ever been proposed to reduce this species of deformity, we will not discuss it here, but pass on to a consideration of the nervous temperament.

*Nervous Temperament.* The indications of this temperament are as follows in relation to the teeth: General color and quality of color, pearl blue or gray inclined to transparency. General form, length predominating over breadth, firm, long cutting edges and cusps. Surface of the teeth, brilliant and transparent, depressions and elevations abounding in long curves. Occlusion, very long and penetrating. Gum margin or festoon, delicate, shapely and fine, oval in curve. Facial contour, delicately oval. Dental arches, rather narrow. Now, if we attempt to restore the dental arch of a patient where the nervous temperament predominates, without taking into account the various indications which harmonize with that temperament, as just stated, it is easy to understand that we may produce a result quite at variance with what should be the proper expression of the face of the patient.

*Bilious Temperament.* With the patient of bilious tempera-

ment we have the indications quite different from those where the nervous temperament predominates. Here we have all the lines strong, firm and rugged, just in proportion as the bilious predominates. In general form the patient is tall, angular and squarely built. The muscles knotty, prominent, hard and tense. The chest, capacious and of good expansive power. The forehead and cranium square. The facial contour angular, with cheek bones high. In the dental arch, the cuspids are large and prominent, and the arch itself is broad and deep, though deficient in anterior curve. An attempt to make such an arch with a delicate oval curve, as in the nervous temperament, would weaken the expression of the face and be entirely out of keeping with every other feature.

So again with those patients of sanguineous temperament we have points of contrast from both the nervous and bilious types. Here we have a patient whose general framework is of firmly rounded contour, medium height and robust. The forehead and cranium rounding and full. The facial contour decidedly round, of which roundness the dental arches fully partake at their anterior portion.

Makers of regulating apparatus may provide us with arch bars more or less resembling the human dental arch, but they cannot make any one shape, guaranteed to fit the temperament of every patient. It remains with us as artists to see that we study well the temperament of our patients before beginning the operation, so that when the movement of the teeth has so far progressed that the case is ready for the arch bar and finishing touches, we may recognize the kind of curve that should be given to the dental arches in order that they may harmonize with the facial contour belonging to the patient by right of temperament, or else we may find that we have not restored a lost expression, but merely substituted one class of deformity for another.—*Items, June, 1902.*

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**HEREDITARY SYPHILIS.** In an article on malformations of the jaws and teeth in hereditary syphilis (*Gazette des Hôpitaux*) Dr. A. Brunet points out a sign which he considers of great value for correctly diagnosing this affection. After first stating that many of the phenomena exhibited by the teeth of those known to be syphilitic are also met with in other diseases, and that certain malformations of the jaws, as prognathism and arched palate, are

rather to be regarded as signs of degeneracy, he asks whether there be any lesions of these structures which may be regarded as presumptive evidence of hereditary syphilis. He says that it is established that erosion of the first molar, especially the lower first molar, furnishes a sign of great value for this purpose. The reason for this is found in the fact that the first molar of the second dentition is the only tooth the ossification of which begins *in utero*. This tooth is ossified and covered with its cap of dentin at the sixth month of intrauterine life. An erosion, according to this author, is a lesion which occurs at the time of formation of a tooth and is due to a momentary interruption of this process. An erosion of a molar tooth is an hereditary fetal affection having as its cause a diathesis capable of acting during intrauterine life. Now syphilis especially exercises such influence. Erosion, then, of the lower first molar in a patient whose other teeth are healthy is, he says, a pathognomic sign of hereditary syphilis. Hutchinson's teeth and the screw-driver shape of the upper median incisors, the ossification of which begins the first month after birth, can also be seriously regarded as presumptive evidences of the influence of hereditary syphilis.

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COLOR AND SHAPE OF THE TEETH AND A SUGGESTED OPERATION. By J. Sim Wallace, London. The general appearance of the teeth is a point in which we as dentists presumably take a special interest. Mr. Tomes says: "I am firmly convinced that I can recognize a type of tooth at a glance which is specially prone to decay." And again: "It is quite common to meet with instances of healthy parents with good teeth bearing a family of children apparently healthy and well grown, whose teeth, although to the casual observer normal in shape, size and general aspect, are to the eye of the dentist doomed to early destruction, and speedily undergo it. These teeth have an appearance somewhat difficult to describe; they have a glassy look, are more translucent than they should be, are softer, and are believed, though the proof is not complete, to be somewhat deficient in their proper proportion of lime salts."

Messrs. Smale and Colyer seem also to believe in the two kinds of enamel. They say: "It is difficult to believe that the bluish translucent enamel and the dense yellowish enamel are identical in structure. The researches [Dr. Black's] enumerated do not by any means conclusively prove that there are no characteristics in the tooth structure which give teeth different powers of resistance."

These extracts will remind the reader of current views. I wish to draw attention to the fact, as I take it, that it is not necessary to assume the existence of two different kinds of enamel, or to insinuate—although there is not any discoverable chemical difference—that there may probably be a molecular difference, or a difference due to a greater or less amount of water of crystallization.

Let us consider first what is in general the color of enamel alone. Is it not of a bluish translucent appearance? Now if this is thick on any particular tooth the tendency for the tooth to present this appearance will be marked; on the other hand, when the enamel is well worn off the dentin it will be highly polished, and the dense yellowish appearance of the underlying dentin will predominate. Then, again, teeth which are well worn with use are kept free from caries by the continual friction of coarse and fibrous food. They do not resist decay on account of their own structure, but because of the environment in which they are placed. The case is different when the enamel remains thick. Here we have to deal with teeth which are not much used, or not much worn down. The friction and cleansing action of coarse and fibrous food is absent, and consequently the teeth are liable to become carious from the lodging of food and microorganisms. The teeth are not "prone to decay," but the environment in which they exist is prone to set up and continue decay. I am firmly convinced that I cannot recognize a type of tooth which is doomed to early destruction, except it be malformed. I would also point out that the different types of teeth referred to do not exist on eruption, but take on their typical characters only after they have been subjected to the action of their respective environments for some considerable time.

Even grossly malformed teeth with ill-developed enamel will, under certain environmental conditions, resist decay, and after a little attention to the environment of the teeth one can recognize a type of environment which will decay any teeth whatever. Should anyone wish to verify the above experimentally it is easily done. Take, for example, an incisor tooth of ordinary color, which will be more or less yellow, especially towards the neck where the enamel is thin, and gradually becoming rather bluish and translucent towards the cutting edge where the enamel is thick: With a carborundum wheel in the engine remove a considerable amount of the bluish translucent part (otherwise the enamel) and the tooth

will become more of the dense yellowish type. Like many other facts, this one requires only to be pointed out. There are no doubt other causes for slight differences in color. It is, however, my intention here to refer only to the two main colors which have been recognized and the significance and importance of their appearances.

As regards the shape of teeth, I think there is a shape of tooth which is normal yet is generally unrecognized as such; while on the other hand teeth are supposed to be normal in shape when they are wholly abnormal. For example, it may be asked, What is the shape of a normal first molar in an adult of normal constitution? In this degenerate age the answer would be something like "Its grinding surface presents five cusps. Four cusps are placed regularly at the four corners of a square, these being divided from one another by a crucial fissure," etc. This description is, of course, totally incorrect, however accurate it may be for the erupting tooth. However, make the description as nearly the opposite as possible, and you will much more accurately describe the form of a normal adult's lower first molar. Let it read, "Its grinding surface presents five little hollows. Four cup-shaped depressions are placed irregularly at the four corners of a square, these being divided from one another by a crucial ridge," etc. I need not elaborate this description. The point upon which I wish to insist, for it is of great importance, is that the grinding surface of a tooth ought under normal circumstances to show signs of wear greater or less according to the time the tooth has been in use. It is difficult to see how, for example, the first lower molar could possibly retain its deep crevices into adult life without running serious risks of lodging sufficient food and microorganisms to initiate caries; whereas, if a coarse and fibrous or otherwise normal diet is taken, not only are the crevices kept relatively clean, but the cusps are worn down and the crevices become correspondingly shallower and less liable to lodge food; indeed, as the cusps get worn away first and the dentin is softer than the enamel, the crevices which are so susceptible to decay become somewhat more elevated than the surrounding cup-shaped depressions, and so less susceptible to caries.

I may here refer to some articles which have been recently appearing in our dental journals about "immune areas" in teeth, but the parts of a tooth are susceptible to caries solely in direct proportion to the lodgeability of food and microorganisms, except at the edge

of the gum, where the tooth has the special protection of the alkaline secretion which is poured out round the root of the tooth. The articles referred to originate in the fallacious belief that the predisposition to caries exists in the tooth structure itself, and consequently they are rather a waste of printer's ink.

Let us now revert to the wearing down of the cusps of the teeth. Notwithstanding the fact that it is generally treated of as a disease, it is, as I have said, a normal process. This may be seen by reference to the skulls of any race which has not lived more especially on refined food and slops. I think this wearing down of the cusps indicates a possible method of preventing caries. I refer to grinding down the cusps of the teeth little by little to do the work that the food ought to have done. The points to which the carborundum wheels require to be applied can easily be marked with articulating paper. This operation should be performed on all the lower teeth at once, or on all the upper teeth except the front six and the lower front six teeth, so that at the end of any one sitting the teeth will all articulate. If one or a few teeth are done at a time they will rise in their sockets till they meet the occluding teeth, but this is not desirable, because inasmuch as the vertical site of the mouth is diminished by the operation, to that extent must the lateral diameter be increased by the lateral pressure of the tongue. This operation is useful also for the temporary teeth. Possibly the softness of the enamel in the temporary teeth suggests the operation more imperatively. I have no doubt the ease with which attrition takes place in temporary teeth indicates a special provision for their protection from decay. I think there is no evidence whatever for the belief that hard enamel is more resistant to caries than soft. The evidence indicates the reverse conclusion.

The cases in which this operation of decuspitation is most suitable are those, for example, where incipient caries threatens the masticating surfaces of the molars and bicuspid and where there is a slight crowding of the teeth. Such cases frequently present themselves either with or without actual caries in one or more of the teeth. The operation can be performed on single teeth, but with less advantage and more danger.

All such operations should be accompanied by instructions as to diet. A coarse and fibrous diet would, of course, supplement the operator's treatment. I may here add that it should be the aim of

the operator to give the patient such instructions as to diet as will relieve him of the necessity of making an annual visit to the dentist whether such visit is advised as a precautionary measure or not. A physician treating, for example, a dyspeptic gives such instructions as will, if followed, lead to a complete cure of the complaint. He does not cure the patient merely *pro tem.*, and tell him to come back in six months or a year when his stomach is out of order again. A radical cure is wanted, and in such cases as those referred to can be had if only the patient is sensible enough to carry out dietetic treatment which ought to be given. Some day I have no doubt we shall have dietetic charts for our patients, with foods allowed and foods forbidden thereon.

May I ask if there is any clinical evidence known to anyone with regard to the effect of toast on teeth? It is rather lodgeable, but perhaps, on account of the hardness of the particles when crushed between the molars, the dense coating of bacteria, etc., associated with incipient caries may be dislodged.—*Dental Record, April, 1902.*

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#### MR. DOOLEY ON POVERTY AND ITS ADVANTAGES.

By F. P. Dunne. Copyright, 1902, by Robert Howard Russell.

"Well, sir," said Mr. Dooley, "ye ought to be glad ye're not sick an' illusthrees at th' same time."

"How's that?" Mr. Hennessy demanded.

"Well, ye see," said Mr. Dooley, "suppose annything happens to ye now; a fellow counthryman dhrops a hammer on ye th' day afther th' picnic, or ye're digestion listens to a walkin' dillygate fr'm th' Union iv Mickrobes an' goes out on sthrike. Th' polisman on th' corner has th' usual suspicions among gentlemen an' hits ye over th' head an' calls th' wagon an' sinds ye home. Th' good woman wrings her hands an' calls Hivin to witness that if ye have a toothache ye wake th' neighborhood, an' slaps a mustard plaster on ye. If she comes back later an' finds ye haven't put th' sheet between ye an' th' plaster an' gone to sleep she knows 'tis seeryous an' sinds f'r th' doctor.

"We continyoo to have doctors in what th' pa-apers calls th' outlyin' wards. They live above th' dhrug store an' practice medicine on us. Th' physicians an' surgeons are all downtown editin' th' pa-apers. Well, dock comes to ye afther a while in a buggy. On th' way up he sets a broken leg, removes an arm, does a little some-

thin' f'r th' city directhry, takes a dhrink, talks pollyticks with th' unhappy parent, an' fin'lly lands at ye'er dure with the burglar's tools. Afther he's closed that dure th' secrets iv th' inner man is known on'y to him. No wan hears or wants to hear annything about it.

"Th' nex' time we see ye, ye come out lookin' pale an' emacy-ated an' much younger an' betther lookin' thin annywan iver raymimbers seein' ye, an' afther awhile ye observe that whin ye start to tell how many stitches it took an' what ye see whin ye smelled th' dizzy sponge, ye'er frinds begin to sprint away. An' ye go back reluctantly to wurruk. Ye niver hear annywan say: 'Hinnissy is great comp'ny when he begins to talk about his sickness.' I've seen men turn fr'm a poor, helpless, enthusyastic invalid to listen to a man talkin' about th' Nicaragooan Canal.

"But with th' great 'tis far diff'rent, I've often thanked th' Lord that I didn't continyoo in polytics whin I was cap'n iv me precint, f'r with th' eyes iv all th' wurruled focussed, as Hogan says, on me, I cud nivr injye th' pleasure iv a moment's sicknesss without people in far-off Boolgharya knowin' whether me liver was on straight.

"Sickness is wan iv th' privileges iv th' poor man that he shares with no wan. Whin it comes kindly to him th' four walls iv his room closes in on him like a tent, folks go by on th' other side iv th' sthreet, th' rollin' mill disappears, an' with th' mornin' comes no honest day's tile. He lies there in blessid idleness, an', no matter what's th' matter with him, he don't suffer half as much pain as he wud in pursoot iv two dollars a day. I knowed a man wanst who used to take his vacations that way. Whin others wint off f'r to hunt what Hogan calls th' finny monsther iv th' deep, he become seeryously ill an' took to bed. It made him very sthrong.

"But suppose I hadn't resigned fr'm Cap'n iv me precinct whin I was defeated. If annything had happened to me ye'd pick up th' pa-apers an' see: 'Seeryous news about th' Cap'n iv th' Twinty-second Precint iv th' Sixth Ward. He has brain fever. He has not. He got into a fight with a Swede an' had his ribs stove in. He fell out iv th' window iv a joolry store he was burglarizin' an' broke th' left junction iv th' sizjymoid cartilage. Th' trouble with th' Cap'n is he dhrinks too much. A man iv his age who has been a soak all his life always succumbs to anny trouble like hyperthroopily iv th' cranium. Docthor Muggers, dean iv th' Post

Gradyate Vethrinary School iv Osteopathy, says he had a similar case las' year in Mr. Hinnery Haitch Clohessy, wan iv th' best known citizens iv this city. Like th' Cap, Mr. Clohessy was a high liver, a heavy dhrinker, a gambler, an' a flirt. Th' cases are almost identical. Owin' to th' code iv pro-fissional eethics Dr. Muggers cud not tell th' bereaved fam'ly what ailed Misther Clohessy, but it was undoubtedly his Past Life.'

"Thin come th' doctors. Not wan doctor, Hinnissy, to give ye a whiff out iv a towel an' make ye sleep f'r an hour an' wake up an' say: 'I fooled ye. Whin do ye begin?' No, but all iv thim. They escort th' prisoner up th' sthreet in a chariot an' th' little newsboys runs alongside sellin' exthry papers: 'Our night edition will print th' inside facts about Cap Dooley's condition, an' th' Cap himsilf, with a cinomatograph iv th' jolly proceedin's be Dock Laparatonny.'

"What happens to the crim'nal at first is th' same as if he was a dacint wurrukin' man. But whin that is done, an' 'tis gettin' so aisy they tell me they'se not much diff'rence between a good clam-salesman an' a first-class surgeon, th' lithry wurruk begins. Ye think 'tis all over whin ye say: 'Dock, put ye'er hand under th' pillow an' take what's there.' But not so. Th' assimbled docks adjourn to a large hall an' prepare th' story iv 'Cap Dooley; a Stormy Career.' Be wan who knows.

"Upon seein' th' Cap, we at once diagnosed th' case as peritclpalitickipantilitisitis, or chicken bone in the throat. Dr. Pincers operated, Dr. Smothers administered th' annysthetic, Dr. Hygeen opened the window, Dr. Anodyne turned on th' gas, Dr. Alicompane turned th' pitchers to th' wall, Dr. Rambo looked out th' window, Dochtors Peroxid, Gycal, Cephalgern, Antipyreen an' Coletar took a walk in th' park an' Doctor Saliclate figured up th' bill.

"As we have said, we diagnosed th' case as above. We can't raymimber th' name. It depinds on how th' syllables come out iv th' hat. We were wrong, although what we see whin we got in more thin made up f'r th' error. We made a long incision fr'm th' chin down an' another acrost, an' not findin' what we expicted, but manny things that ought to be kept fr'm th' fam'ly, we put th' Cap back an' went on. Th' op'ration was a complete success. Th' wretch is restin' an' swearin' easily. We have given him a light meal iv pickles an' anti-septic oats, an' surgical science havin' done

its duty mus' lave th' rest to Nature, which was not in th' consultation, bein' considered be some iv us slightly irregular. (Signed) Look at our names.

'Pincers,	Anodyne,	Antipyreen,
'Smothers,	Alicompane,	Coletar,
'Muffins,	Rambo,	Gycal,
'Hygeen,	Peroxid,	Saliclate.'

"But that' nawthin' If ye think they'se annything ye wud like to keep up ye'er sleeve, look f'r it in th' pa-apers. 'Th' followin' facts is stated on th' authority iv wan iv th' attindin' surgeons: Cap Dooley cut up terribly undher th' chloryform, singin' songs, swearin' an' askin' f'r Lucy. His wife's name is Annamariar. She was in th' adjinin' room. It seems they have had throuble. Th' room was poorly furnished. Th' Cap's clothes was much worn, as was most iv him. He must have led a shockin' life. It is doubtful if he will iver raycover, f'r he is very, very old. He has been concealin' his age f'r manny years. He is a notorious profligate, as was well shown be th' view we had. Th' flash light pitcher iv th' Cap will appeal to all who knew his inner histhry.

"An' there ye ar-re. Think iv a man comin' out in th' light iv day afther all that. He can't get on clothes enough to cover him. He may bear himself with a haughty manner, but he feels that ivry man he meets knows more about him thin he knows himsilf. Th' fellow on th' sthreet has been within th' walls. He's sayin' to himsilf: 'Ye're a hollow sham, composed akelly iv impaired organs an' antiseptic gauze.' To th'end iv his life he'll niver be annything more thin an annytomical chart to his friends. His privacy is over f'river, f'r what good can it do annywan, Hinnissy, to pull down th' blinds iv his bedroom if ivrybody knows exactly th' size, shape an' location iv his spleen?

"No, sir, if I've got to be sick, give me th' ordhn'ry dacencies iv poverty. I don't want anny man to know anny more about me thin he can larn fr'm th' handiwork iv Marks, th' tailor, an' Schmitt, th' shoemaker, an' fr'm th' deceitful expression iv me face. If I have a bad heart, let him know it be me eyes. On me vest is writen: 'Thus far an' no farther.' They'se manny a man on intimate terms with th' Impror iv Rooshya that don't know anny more about me thin that I'm broadcloth on Sunday an' serge on week days. An' I don't intind they shall. I hide behind th' privileges iv me

position an' say: 'Fellow citizens, docks an' journalists, I cannot inthrojooce ye to th' Inner Man. He's a reecloose an' averse to s'ciety. He's modest an' shy an' objects to callers. Ye can guess what kind iv man I am, but I wudden't have ye know.' An' I can do that as long as I stay poor."

"I'm glad I'm poor, said Mr. Hennessy.

"It gives ye less to talk about, but more to think about," said Mr. Dooley.—*Chicago American*.

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**TRICHLORACETIC ACID.** By Dr. C. E. Drummond, Osage, Iowa. Read before the Iowa State Dental Society, May 21, 1901. Realizing that trichloroacetic acid as a medicine was not a new remedy to many of the dental profession, it was with some hesitation that I decided to write upon this subject, but as I had been successful with its use I wanted to tell others something of its merits. Trichloroacetic acid ( $C_2HCl_3O_2$ ) is obtained by the action of chlorine on glacial acetic acid, or by the oxidation of anhydrous chloral by means of fuming nitric acid. This acid belongs to a group of three, all having similar properties. The other two are the monochloroacetic and dichloroacetic acids. All of the chloroacetic acids are powerful caustics, destroying the epidermis. The mono and tri-acids are solid crystalline deliquescent bodies; dichloroacetic is a colorless liquid having a suffocating odor. Trichloroacetic acid occurs in colorless rhombic crystals, very soluble in water or alcohol.

My first experiment was in the mouth of a young man, who came to my office with the determination of having all of his teeth extracted. Upon examination I found some of them in a very bad condition; not only were they badly decayed, but the two central incisors were abscessed, and had been in that condition for about two years. The teeth were very loose, and the apical foramen had become so enlarged that an instrument could be run through without difficulty. I treated the two centrals with all the known remedies that I had at my command, without any apparent effect, and then, as I had read something concerning the value of trichloroacetic acid, I resolved to try it. Owing to its antiseptic, caustic, stimulating, and astringent properties, I could readily see its value in such a case as the one in hand. I found from the first treatment with this acid beneficial results, so I continued for nearly a month. After that time the teeth had become firm and the gum tissue pre-

sented a healthy condition. I carefully filled the root-canals with chloro-percha and canal points and crowned the teeth. That was done one year ago the first of June, and the roots and gums seem to be in a perfectly healthy condition.

My next trial was in the mouth of a young lady suffering from pyorrhea, who had abandoned all hope of saving her teeth. They were all loose in the sockets, the gums highly inflamed, and the patient had not been able to properly masticate her food for some time, consequently she was much weakened for lack of proper nourishment. Previous to coming to my office the patient had had a number of her teeth extracted, so that in order to have proper masticating surfaces she would need either to have bridge-work inserted or have her teeth extracted and full upper and lower dentures inserted. We chose the former method. My success was more than I had dared to hope for. I first removed the deposits by the use of scalers and cleaned the teeth thoroughly, and then applied the acid, working it well down into the pockets and around the teeth. At the next visit a marked improvement could be seen in the condition of some of the teeth, while in others there had not been much change. On investigation I found some deposits remaining, which I removed and again applied treatment. This I followed up persistently until the gum tissue presented a perfectly healthful appearance, and the teeth had become so firm that I could attach bridgework, which was successfully done. The patient has ceased taking medicine, has regained her health and also put on flesh.

In another case of pyorrhea, which was an apparently hopeless one, in the mouth of a gentleman about fifty years of age, the patient said he had tried nearly everything known, except trichloracetic acid, without success. The disease in this case was of many years' standing. The same treatment was followed in this as in the preceding case, and there seems to be a complete cure. Also other cases of minor importance.

In treating a spongy condition of the gums the acid should be applied to the gum by means of an orange-wood point wrapped with cotton. Or where a cavity is filled up with hypertrophied gum tissue, the acid applied in the same manner will remove the tissue without pain to the patient and without bleeding. Trichloracetic acid has also been recommended for the removal of gum tissue from troublesome third molars. I have never tried it for that purpose,

but should think it would be valuable. I have successfully used it for canker sore mouth, which is at times very troublesome and painful. One or two applications will usually be sufficient. In these cases I use the pure acid in small quantities.

In cases of pyorrhea we often find bleeding gums troublesome when removing deposits from the teeth. A small piece of cotton saturated with the acid placed in the pockets of the gum for a moment will prevent bleeding, and we will be enabled to do our work much better. If a stimulating antiseptic effect only is desired, use 2 to 5 per cent; escharotic or solvent, 10 to 90 per cent. There are no systemic effects from the local use of trichloroacetic acid, but over 50 per cent should be used with care and the surrounding tissues protected. It can be used from 10 to 90 per cent in pyorrhea pockets, according to the results desired.—*Cosmos, May, 1902.*

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**VOLCANIC DISEASES OF TEETH.** By U. S. Surgeon J. N. Eager. (*Public Health Reports.*) On the examination of certain Italian emigrants embarking at Naples one is struck with the frequency of a dental peculiarity known as "denti di Chiaie," described by Prof. Stefano Chiaie, and bearing his name. This impairment of the teeth, often not amounting to more than a mere imperfection, is an acquired one, due to local geological conditions, and so, because of altered hygienic surroundings, will not pass beyond the present generation of Italians in America. The etiology seems to be connected with volcanic fumes or the emanations of subterranean fires, either fouling the atmosphere or forming a solution in drinking water. In Naples it is more often attributable to water than to the air, and since the Serino water, brought in conduits from a distant mountain height, has been in use and local wells condemned, the incidence of the disease among infants has greatly diminished.

The people of Pozzuoli, a town of 16,000 inhabitants, situated five miles from Naples, are marked off from the people of neighboring places by their distinguishing characteristic of black teeth, apparently strong and serviceable, but devoid of enamel and hideously dark. The environs of Pozzuoli are everywhere volcanic. Close at hand is the Solfatara, a half-extinct crater full of cracks from which gases are constantly issuing. Some of the inhabitants of Pozzuoli drink the water of the springs, a water necessarily charged under pressure with volcanic fumes; all of them are con-

stantly living in an atmosphere filled with noisome gases. The theory most generally received in Italy is that these gases have a selectively hurtful effect on enamel formation in early childhood, but that the growth of the other dental tissues is not interfered with. When the cause is active during the entire period of second dentition, the whole tooth is bereft of enamel and becomes perfectly black.

Among the better class of Italians living inland it is the custom to go to the seashore in summer. Naples has always been a popular resort, and as a result of the temporary exposure of children brought with their parents to Naples (at the time when Serino water was not used) it is frequent to see among well-to-do people an otherwise handsome face marred by a line of fine, black markings crossing the incisor teeth in a horizontal direction. This fault of development is known among Neapolitans as "*denti scritti*" or writing on the teeth. The marking, when present on finely formed white teeth, resembles the diminutive lettering which is sometimes done on seashells for purposes of ornamentation.

**FOREIGN BODIES IN THE EAR, TO REMOVE.**—Dip the end of a camel's hair brush in glue and leave it in position against the body. When dry after a few hours, pulling upon the brush will remove the whole thing.—*Canadian Practitioner*.

**HEALERS LOSE.**—The Supreme Court has decided (*Jour. A. M. A.* March 1, 1902,) that magnetic healers and osteopaths must have a license to practice, in the case of the People against George P. Gordon, an advertising "healer" of Rockford. Gordon was charged with practicing medicine without a license, and after trial the Circuit Court directed the jury to find for the defendant. The Supreme Court reversed and remanded the cause. The following is the text of the finding of the court:

We all agree that the object of this [the statute] is to protect the sick and suffering and the community at large against the ignorant and unlearned who hold themselves possessed of peculiar skill in the treatment of disease, and to prevent them from holding themselves out to the world as physicians and surgeons without having acquired any knowledge whatever of the human system or of the disease and ailments to which it is subject. Without some knowledge of the location and offices of the various nerves, muscles, and joints the manipulation of those parts and the flexing of the limbs can not be intelligently, if, indeed, safely, practiced.

Merely giving massage treatment or bathing a patient is different from advertising one's business or calling to be that of a doctor or physician, and, as such, to administer osteopathic treatment. The one probably falls within the profession of a trained nurse, while the other does not.

## Letters.

### A SQUIB FROM MINNEAPOLIS.

MINNEAPOLIS, June 21, 1902.

*To the Editor of the Digest,*

MR. EDITOR:—Though a constant reader of the DIGEST for some years, I have never contributed a line to its pages. Recently, however, a sense of duty has possessed me, and in order to satisfy its demands I enclose a squib for your columns. Its size may suggest a cannon cracker rather than a squib, but I hasten to assure you that its contents, as you will probably perceive, are quite harmless.

Though fond of solid, scientific reading, I must say that I have always enjoyed the "facetious jocularities" that adorn your pages. I do not think that dentistry, with all due regard to proper dignity, should take itself too seriously.

Hoping that you will find my subject a timely topic, and right in the central current of events, I remain,

Yours very truly,

A. G. BENNETT.

[Dr. Bennett's philosophic, pertinent and pleasing poem will be found on page 563 of this issue. We take this opportunity of publicly thanking him for favoring us, and we hope he will not let his first attempt be his last. We also wish to assure our many friends and contributors of our appreciation of their help. May we be permitted to commend the example of Dr. Bennett and others to all our readers.]

### AUTHORSHIP OF THE PAPAIN METHOD.

CHICAGO, July 12, 1902.

*To the Editor of the Digest,*

DEAR DOCTOR:—I was much surprised when reading Dr. Cassidy's article in the June DIGEST to note that he gives Dr. Harlan credit for being the first to use papain as a pulp digester. However, if my memory serves me correctly, the use of pepsin, hydrochloric acid, etc., has been repeatedly quoted in various dental journals as coming from Dr. Harlan. I have no desire to take the credit from him, but I wish to state what I believe is correct, as well as to avoid the constant rehash of old, tried methods as new treatment.

It is a matter for wonderment and speculation that the more modern text-books—Burchard, Kirk, Marshall, etc., do not even mention the pepsin method. I know that as long ago as when I was a pupil, in England, in 1883, my preceptor used the method, learning it from Prof. Oakley Coles. In my old mechanical dentistry (by O. Coles, 1873) the method was given, but I believe that it was not then so well thought of by the profession, because many forgot to add the hydrochloric acid, which is necessary for digestion to occur. Lactic acid came under the same teaching and for the same purpose, and Miller's theory of caries was not known.

I can hardly believe that Dr. Harlan was the first to use papain, as Dr. Jonathan Taft in his lectures to the students in the Dental Department of the University of Michigan, according to note-books of members of the classes in 1885-6-7, etc., gave credit to the finder, Dr. Wm. VanAntwerp, and spoke of its value as a digester and as being less irritating than pepsin. He also "suggested its being of value where pulps were only slightly affected by suppuration and necrosis, to digest the exposed portion, carefully cleansing with sterilized warm water, and capping, using any ordinary method, as collodion, phosphate of zinc," etc. He also spoke of its medicinal value in diphtheria, and the students asked where it could be obtained. From this it seems natural to infer that if the papain treatment were due to Dr. Harlan it would be found in some year previous to the International Dental Congress in 1900.

Speaking of pulp treatment, I have found the stearate of zinc with aristol and oleate of zinc and iodol as excellent agents for pulps which need stimulative treatment, then capping when an effort is being made to save the pulps, as in young teeth.

Yours truly,

VIDA A. LATHAM.

"AND LAST OF ALL THE WOMAN DIED ALSO."

SILVER CITY, N. M., July 14, 1902.

*To the Editor of the Digest,*

DEAR DOCTOR:—Reading the article on pp. 462-466 of the June number of the DIGEST—"Essential Oils; Their Application in Dentistry"—is well calculated to give a man "that tired feeling." One would think that these gentlemen were still hugging the delusion that drugs cure disease. They use up page after page of a supposedly valuable journal in discussing whether this drug or that

has the greatest germicidal power, and therefore is the best to use in the treatment of abscessed teeth. They labor learnedly to discover just how this or that drug produces a germicide, when the truth of the matter is that no germicide whatever is required in the treatment of abscessed teeth. If it were not for the patient and unremitting toil and marvelous power of the tissues in getting rid of the germicides used these gentlemen would never cure an abscessed tooth.

They call on China, Ceylon, and the dirty chemical laboratories for germicides, when there is ever present, ready, and anxious to be used the finest, purest germicide that the world ever knew—the serum of the blood. It has been elaborated and perfected for this very purpose “since first the flight of years began.” It is the only germicide in the world that will allow the tissues to heal while in actual contact. If you secure the proper action of this substance you will cure the abscess, and if you do not you will never effect a cure.

The following remarks are made on the treatment of what are known as “blind abscesses,” those situated in the apical space, without fistulous opening. When a root canal is opened and there is a free flow of pus through it, followed by blood, the canal may be safely filled permanently so soon as the hemorrhage ceases. The apical space and canal will then be as thoroughly aseptic as if treated for a month. When the canal is small and the discharge is not free, or where there is a latent abscess, more time is required. The first thing to do in such cases is to use a stimulating dressing. This will cause an increased flow of blood to the parts, causing pressure which forces the poisonous gases, together with the drug used, through the canal, and brings an exudation of serum into the apical space. It is not necessary that the pus be forced through, for the giant cells will take care of the pus when the gases which are poisonous to them have been expelled.

The first dressing used in the treatment of such teeth should have the following properties: 1st, stimulating; 2d, penetrating; 3d, non-coagulating, so the canal may remain open for the escape of gases; 4th, liquid, for the same reason; 5th, insoluble in water, so that it will retain its properties; 6th, antiseptic, to keep the apical space from becoming reinfected from the oral fluids. I use oil of cinnamon for this purpose. When the abscess has been sufficiently

stimulated a dressing should be used having all the above-named properties except the first. Here I use campho-phenique. This on cotton in the root canal will hold its strength for months, and protect the apical space from reinfection even without other fillings.

It is better not to enlarge the canal at first sitting for fear of plugging it with drill cuttings. An open canal is the first essential to success, for with a plugged canal no drug will ever help a "blind abscess" per se.

Yours truly,

W. H. WHITE.

**PHLEGMON AND FISTULA OF LOWER JAW.**—Manley summarizes his article as follows: Perforative endostitis of the lower jaw is an infective lesion usually consecutive to caries of the crown, incomplete extraction, or the late eruption of the third molar. Infection first provokes an alveolar abscess, with widespread tumefaction and rigidity of the jaw. This may be followed by dislodgment of the imbedded fang or by alveolar necrosis. Perforative osteitis from a dead fang occurs through the least vascular surface of the mandible, by way of the dental canal; this is followed by an abscess, ultimately degenerating into a chronic, unsightly fistula. Surgical aid is resorted to, rather as a means of removing the blemish than because of severe pain. Operative intervention embraces the complete extraction of diseased fangs; dissection away of scar tissue; the thorough curettage of the sinus, and the closing of the breach in the soft parts in such a manner that little or no deformity will result after healing. Drainage must be entirely from the base of the alveolus into the mouth, hence the importance of frequent cleansing of the gums with antiseptic lotions until repair is complete.

**TONGUE AND LIP CENTERS.**—With the report of a case of cerebral bulbar palsy, Dana describes the localization of the tongue and lip centers, both in view of clinical experience as reported in the literature and from experiments observed. His conclusion is that in the human brain the lip and the tongue centers are closely connected and more or less identical. One group of centers for the tongue is in relation with the articulatory movements of the lips, and another with the movements of mastication, opening and shutting the mouth and deglutition. The area for the excitation of movements of the tongue is a wide one, being associated probably in its lower parts with the articulatory movements and in the upper parts with the masticatory movements. The centers lie at the base of the pre and post-central convolutions. Paralysis of the tongue, and to some extent of the lips, from a one-sided cortical lesion occurs, and may perhaps be explained by the fact that in many individuals the brain becomes accustomed to use only the center of one side, and that temporary paralysis will frequently follow an injury to the center in use. This will also explain the difficulties of deglutition and often of articulation in hemiplegia. Dana also doubts that permanent bulbar paralysis can be produced by cortical lesion of one hemisphere, if so, it must be considered an anomaly.

# The Dental Digest.

PUBLISHED THE FIFTEENTH DAY OF EVERY MONTH

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Where All Communications Should be Addressed.

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## Editorial.

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### THE TRAFFIC IN OFFICE RIGHTS.

A member of the Dental Protective Association calls our attention to the fact that an individual is traveling through the state of Illinois selling office rights and town rights entitling the buyer to use "A System of Painless Dentistry" On investigation we find that what he sells is valueless, as it is simply a modification of the "Hale Method of Painless Dentistry," which the Protective Association exposed several years ago. This is but one of numerous instances where worthless devices and methods are sold to gullible dentists. In almost all cases this loss and deception could be avoided if the members of the Protective Association would communicate with its chairman before purchasing. It can be stated as a general principle that when a man wants to sell office, city or state rights on a device, formula, method or anything of the kind, he is not giving value for money received, and could not succeed in the open market.

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### HOIST BY HIS OWN PETARD.

It will be remembered that at the meetings at Milwaukee last August Dr. James H. Worman, the American consul at Munich, was present and presented a great mass of evidence to show the discredit that was being brought upon dentists in Germany and upon the dental profession and dental colleges in America through the illegal and questionable transactions of the German-American Dental College of Chicago, aided by the Illinois State Board of Examiners. Students who were in nowise fitted to practice dentistry were graduated from this school, and when they began practice in their own country as graduates of an American dental college they of course cast discredit on American schools and dentists. The greatest abuse was in Germany, and it was shown that unless this traffic in diplomas was stopped the German government would

cease to recognize as reputable any American dental college or allow the holders of any diplomas issued in America to practice in Germany.

The National Dental Association appointed a committee to take up this matter, and appropriated \$1,000 to aid in carrying on the work. The National Association of Dental Faculties called a special meeting, and voted that each college should be assessed in a sum not to exceed \$50 to help on the reform. The editor of the DIGEST was appointed chairman of this committee, and at a subsequent meeting of this committee and the Committee on Foreign Relations of the N. A. D. F. the former was made the Prosecuting Committee of the Faculties' Association.

At this juncture the governor of the state of Illinois removed the state board of Dental Examiners and, with the exception of one member, appointed an entire new board. It was generally believed, but not proven, that certain members of the old board were guilty of malfeasance in office and were controlled by the German-American Dental College. Consequently, the committee began the accumulation of evidence to prove these facts, and in a short time the secretary of the old board, Dr. Jacob H. Smyser, and one Edward Flynn, a detective in the employ of the board, were indicted on several counts by the grand jury.

In this connection it should be remembered that all that made the diplomas from the German-American Dental College valuable was the fact that the Illinois State Board issued certificates to holders of same. We have evidence which will be presented later, showing the grossest collusion and abuse in these transactions. The new board was made of different stuff, and upon the advice of the attorney-general of the state adopted a new set of rules and regulations. Among them was one that the Board would refuse to recognize any dental college which did not come up to the requirements of the National Association of Dental Faculties, which were promulgated to govern the reputable schools of this country. The German-American Dental College did not meet these requirements, and the Board had grave doubts as to its reputability and trustworthiness; consequently, when a graduate of this institution presented a diploma and asked for a license the Board refused to grant it. Thereupon the dean of the College, Fritz W. Huxmann, brought mandamus proceedings to compel the Board to issue licenses upon

its diplomas, and the case was brought to trial July 9 before Judge Chetlain, one of the judges of the Superior Court of Cook County.

From the time of its organization the committee above referred to has been collecting evidence with a view of exposing the German-American Dental College and other diploma mills, so was well prepared to take charge of the defense of this suit. Huxmann undoubtedly expected an easy victory, but if he had known what evidence the committee had in hand he would not have brought the suit. His doing it saved the committee the trouble of bringing one against him. At time of going to press the trial is still in progress, and it will probably be some little time before it is ended and the court renders a decision. Of course in this case the court is simply to decide whether or not the Board acted in good faith in refusing to issue a license to a graduate of this college, but the suit is of vastly more importance than appears on its surface, because the proceedings are bringing to light sufficient evidence of corruption to probably wipe the German-American College out of existence and to lead to criminal proceedings of an unusual nature in the near future. Next month we can promise our readers a report of this suit in detail, which will astound them with its revelations of evil-doing.

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## Notices.

### INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association held its annual meeting at Lake Maxinkuckee, June 24-26, 1902, and elected the following officers: Pres., H. C. Kahlo; V.-P., J. H. Morrison; Sec'y, F. R. McClanahan.

### NORTH CAROLINA STATE DENTAL SOCIETY.

The North Carolina State Dental Society met at Raleigh, June 17-19, 1902, and elected the following officers: Pres., J. M. Benton; 1st V.-P., J. R. Osborne; 2d V.-P., L. D. James; Sec'y, J. M. Fleming; Treas., R. M. Murrell; Essayist, F. L. Hunt.

### COLORADO STATE DENTAL ASSOCIATION.

The sixteenth annual meeting of this Association was held at Colorado Springs, June 17-19, 1902, and the following officers were elected for the ensuing year: Pres., H. B. Hayden; V. P., E. W. Varley; Sec'y, W. A. Brierley; Treas., Wm. Smedley. The candidates elected for appointment by the governor on the state board of dental examiners were—W. H. Hall, H. F. Hoffman, M. H. Smith, T. Ashley, G. R. Warner. The next meeting will be held at Pueblo, June 16-18, 1903.

W. A. BRIERLEY, Sec'y.

## PENNSYLVANIA STATE DENTAL SOCIETY.

The annual meeting of the Pennsylvania State Dental Society was held at Bedford, July 8 10, 1902, and the following officers were elected: Pres., R. H. Nones; V.-Ps., G. L. Jameson, I. N. Broomell; Rec. Sec'y, C. V. Kratzer; Cor. Sec'y, V. S. Jones; Treas., R. H. Swing.

## RHODE ISLAND STATE DENTAL SOCIETY.

The annual meeting of the Rhode Island State Dental Society was held at Newport, July 8 9, 1902, and the following officers were elected: Pres., T. J. Lynch; V.-P., Dr. Whitmarsh; Sec'y, C. A. Carr; Treas., H. W. Gillett; Ex. Com., Drs. Powers, Wilbur and Stearns.

## FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

The First District Dental Society of Illinois will meet at Rock Island, Sept. 23-24, 1902. The outlook is encouraging, and this promises to be the best meeting in the history of the Society. Dentists in this and neighboring states are cordially invited to attend.

L. W. SKIDMORE, Ex. Com.

## MARYLAND STATE DENTAL ASSOCIATION.

The Maryland State Dental Association met at Baltimore, June 24, 1902, and elected the following officers: Pres., H. A. Wilson; V.-Ps., W. G. Foster, A. C. McCurdy; Rec. Sec'y, W. W. Dunbracco; Cor. Sec'y, F. F. Drew; Treas., S. G. Pennington; Board of Governors, C. J. Grieves, C. Gingrich, B. Holly Smith, G. R. Carter.

## TENNESSEE STATE DENTAL ASSOCIATION.

The annual meeting of the Tennessee State Dental Association was held at Monteagle, July 8-10, 1902, and the following officers were elected: Pres., W. K. Slater; 1st V.-P., R. B. Bogle; 2d V.-P., W. P. Menzies; Rec. Sec'y, A. S. Page; Cor. Sec'y, J. T. Meadors; Treas., J. D. Towner; Ex. Com., J. H. Peete, W. P. Sims, A. R. Melendy. The next meeting will be held at Nashville.

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## News Summary.

H. K. JONES, a dentist at Parkersburg, W. Va., died June 15, 1902.

GEO. W. JONES, 74 years old, a dentist at Richmond, Va., died June 26, 1902.

WM. MOOREHEAD, 28 years old, a dentist at Denver, Col., died June 25, 1902.

A. L. SWEET, 22 years old, a dentist at Bennington, Vt., died July 4, 1902.

IVORY WEBSTER, dentist, aged 82 years, died at West Liberty, Ia., July 3.

C. E. ALTEMUS, a dentist at Johnstown, Pa., is critically ill with typhoid fever.

E. C. SMITH, 58 years old, a retired dentist at Westfield, Mass., died July 2, 1902.

TOBIAS SCHLOSSER, 88 years old, a dentist at Hagerstown, Md., died June 29, 1902.

C. B. RIGGS, 44 years old, a dentist at Lincoln, Neb., died June 17, 1902, from heart failure.

R. E. MOON, 56 years old, a dentist at Cleveland, O., died July 6, 1902, after six months' illness.

F. L. DANFORTH, a dentist at Malone, N. Y., 50 years old, died June 20, 1902, from blood poisoning.

F. S. WEBSTER, of Carthage, Mo., who went to Kansas some time ago for his health, is reported as convalescent.

J. B. DUNLEVY, 84 years old, and until three years ago a dealer in dental supplies at Pittsburg, died June 29, 1902.

I. J. WEATHERBEE, 85 years old, and one of Boston's oldest dentists, died at Dorchester, Mass., June 24, 1902, after a short illness.

E. E. BUCKLE, 35 years old, a dentist at Dexter, Mo., died June 26, 1902, from pleural abscess, caused by a blow in a boxing match.

LOUIS ZORN, a retired dentist at Kansas City, Mo., killed one of his tenants June 22, 1902, in a quarrel over the payment of rent.

SPRINGFIELD (O.) DENTAL SOCIETY at its annual meeting, June 23, 1902, elected the following officers: Pres., H. J. Bosart; Sec'y-Treas., W. A. Barber.

FASHIONABLE.—"Have you a fashionable practice?" asked the caller. "Oh, yes, you should see the howling swells leaving my office," replied the dentist.

STRENGTH IN NUMBERS.—It is suggested that an editor uses the term "we" so that if people don't like what he writes they will think there are too many people to be tackled.

MONTANA STATE BOARD OF DENTAL EXAMINERS elected the following officers June 26, 1902: Pres., E. A. Myers; V.-P., G. W. Pelzer; Sec'y, D. J. Waite; Treas., H. J. Wirth.

BANKRUPT.—M. W. Pray, a dentist at Holbrook, Mass.; liabilities, \$2,208; assets, none. F. P. & L. W. Wilkins, dental supplies, Boston; liabilities, \$2,631.23; assets, \$475. F. B. Yeilding Laceyville, Pa.

SIMILIA SIMILIBUS CURANTUR.—On being asked, the old gentlemen stated that Christian Science did not cure him of rheumatism, but that rheumatism cured him of Christian Science, which seemed plausible.

RUSSIA VALUES TEETH.—A Russian opera singer had five teeth knocked out in a railroad accident recently, and the civil court in St. Petersburg has given judgment for \$50,000 in her favor against the railroad company.

MORE APPRECIATION.—"The DIGEST gets better with each succeeding year." O. M. Daymude, Monmouth, Ill. "I think the DIGEST is rapidly coming to the front." J. E. Stevenson, Ponca, Neb. "I think the DIGEST the best and most useful, with real practical suggestions, of any of the journals. I take several." J. B. Devlin, Chicago.

**WAR BECOMING HEALTHFUL.**—"I can see in me moind," says Mr. Dooley, "th' day when explosives'll be so explosive an' guns'll shoot so far, that only th' folks that stay home'll be kilt, an' life insurance agents'll be advisin' people to go into th' army."

**CHARCOAL AS A DENTIFRICE.**—The *Review Dispatch* of Moline, Ill., says, "To whiten the teeth, clean them twice a day with pulverized willow charcoal." Some of the profession in that town should enlighten the editor, or there will be some sorry looking gums among the ladies.

**CHURCH FAIR SELLS TEETH.**—At a Baptist church fair in Lee, Mass., several sets of false teeth were offered for sale, and finally a toothless man became the owner of one on payment of twenty-five cents. They did not fit, of course, but he thought "they would work all right after a while."

**HARVARD DENTAL ALUMNI ASSOCIATION** held its thirty-first annual meeting at Boston, June 23, 1902, and elected the following officers: Pres., L. D. Shepard; V.-P., C. E. Perkins; Sec'y, Waldo E. Boardman; Treas., E. P. Holmes; Ex. Com., Waldo E. Boardman, Wm. P. Cooke, N. A. Stanley.

**ACCIDENTS.**—H. S. Abendschein, a dentist at Baltimore, Md., was severely burned last month by the explosion of a gasoline heater in his laboratory.—A young woman assistant in the office of a St. Paul dentist was badly injured last month by the explosion of a vulcanizer, which also wrecked the room.

**INSECT REPELLANTS.**—It is claimed that the odor of the oils of citronella or of pennyroyal will drive away mosquitoes, and that oil of mint repels and oil of thyme attracts insects. Mignonet or geraniums in blossom will keep out flies, as also will a few drops of oil of bay leaves placed near a window.

**CENSUS WORK DONE RAPIDLY.**—The final report of the statistics of manufactures for the twelfth census is in print, which is an unprecedented event in census history. The difficult and complicated task has been accomplished without delay or friction, and the information will be of immense value to the public.

**WISCONSIN STATE BOARD OF DENTAL EXAMINERS** held its annual meeting at Madison, May 13-16, 1902, and elected the following officers: Pres., C. C. Chittenden; Sec'y, J. J. Wright, 1218 Wells Bldg., Milwaukee. The present personnel of the board is—J. J. Wright, L. L. Leslie, E. A. Gatterdam, C. S. McIndoe, C. C. Chittenden.

**DOWIE AS A DENTIST.**—A deaconess in Dowie's church stated recently in public meeting that prayer according to Dowie's methods had cured her of consumption and brought her a new set of natural teeth. We knew that Dowie had been trying to run physicians out of practice, but did not suppose he was going to interfere with dentists.

**SMALL CHARGE FOR MISTAKES.**—Prices in the Klondike are very high for everything. A man recently returned from there related that a dentist charged him only \$2 for extracting a tooth, explaining that the price was low because he pulled the wrong one, but that if the patient wanted the aching one taken out it would cost him \$10.

DENTAL COLLEGE COMMENCEMENTS.—Tufts College, Dental Department, Boston, Mass., June 18, 32 graduates. University of Michigan, Dental Department, Ann Arbor, Mich., June 19, 69 graduates. College of Physicians and Surgeons, Dental Department, San Francisco, June 25, 46 graduates. New York Dental School, New York City, May 5, 1902.

BOSTON AND TUFTS COLLEGE DENTAL ALUMNI ASSOCIATION held its annual meeting last month and elected the following officers: Pres., H. R. Piper; 1st V.-P., J. W. Forbes; 2d V.-P., W. E. Brigham; Rec. Sec'y, M. L. Woodward; Cor. Sec'y, G. E. Squires; Treas., Wm. Rice; Ed., J. R. Piper; Ex. Com., F. S. Fogg, I. J. Weatherbee, W. F. Winchester, B. H. Strout.

"THE BOY GUESSED RIGHT."—A small boy with the toothache recently went to a dentist, accompanied by his uncle. It was decided to administer ether, so this was done and the tooth removed. As the little chap began to regain consciousness he asked, "Am I in heaven?" but as his vision grew clearer he saw his uncle and said, "No, I am not in heaven, for there is Uncle Bob."

THANK YOU, DR. HOFF.—"The proceedings of the National and Southern Dental Association, through the enterprise of the DENTAL DIGEST, have come to hand just six months after the meeting. This is several months earlier than for any previous meeting. The printing and bookmaking are exceptionally well done, and reflect great credit on the publishers."—*Dental Register*.

DAMAGE SUITS.—A woman of Columbus, O., on June 23 brought suit against a dentist for \$2,000 damages, alleging that he treated her teeth unskillfully and burned one side of her face with arsenic.—A man at Youngstown, O., recently died of gangrene of the gums, and his widow has sued a dentist in the town for \$2,000 damages, alleging that death resulted from improper dental work.

PENNSYLVANIA UNIVERSITY DENTAL COLLEGE ALUMNI ASSOCIATION held its twenty-second annual meeting at Philadelphia June 17, 1902, and elected the following officers: Pres., W. D. Tracy; V.-Ps., R. H. D. Swing, C. D. Crooks, J. P. Nichol; Sec'y and Treas., Victor Cochran; Orator, G. W. Hurd; Coeditor, W. Zerfing; Ex. Com., R. H. D. Swing, H. B. Hickman, F. W. Allen, S. P. Cameron, M. I. Schamberg.

FIRES.—S. J. Cunningham, San Francisco, June 14 lost his office and dwelling. Dr. Meadow, a dentist at Donalsonville, Ga., June 26 lost \$250; no insurance. G. E. Medley, Hopkinsville, Ky., June 24 lost \$1,000; no insurance. A. Matthews, Omaha, June 28, \$200. It is believed that rats and matches caused this blaze. E. M. O'Huse, Alexander City, Ala., June 12, \$500; partly insured. J. S. Roberts, Hartshorne, I. T., June 14, \$600; insurance, \$400.

ROBBERIES.—Two dentists at Aurora, Ill., were robbed on July 8, and two at Elgin, Ill., on July 7 lost respectively \$10 and \$25.—June 24 a dentist at Gloucester, Mass., lost \$100.—June 28 a dentist at Beaver Falls, Pa., lost \$115 in gold and supplies.—June 19 the office of a dentist at San Antonio, Tex.,

was looted of \$10.—It is reported that nearly a dozen dentists in Toronto, Can., have recently been robbed by sneak thieves or burglars. In all cases gold only was taken.

**POPULATION OF THE UNITED STATES.**—The total population of the United States on June 1, 1900, was 76,303,387. Of native-born persons there were 65,843,302, and of foreign-born 10,460,088—that is, of every 1,000 persons, in 1900, 863 were born in the United States, and only 137 outside the borders of the country. If in the foreign element are included the children of foreign white parents, the foreign element now constitutes about one-third of the total population—34 per cent. The native whites of native parentage constitute slightly more than one-half—53.8 per cent.

**SEASONABLE SIGNS.**—"I'm in court," reads a card on the lawyer's door; "At the hospital," appears on the doctor's slate; "Be back in an hour," say several more, while others invite one to "Sit down and wait." "Gone to the bank," is the broker's sign; "Back soon," is found on the ice dealer's hook; "Out collecting," says a dealer in wine; "Sick in bed," is the dentist's—so says his book. 'Twas everywhere thus, so with nothing to do, I hied me away to the baseball ground; and there, strange to say, yet none the less true, each of the above in the grand stand I found.

**FATALITIES.**—A man at Philadelphia is just recovering from an attack of blood poisoning, which threatened to be serious. The broken end of a wooden toothpick, which lodged between his teeth and entered the gum, is responsible for the trouble.—A man at Leavenworth, Kas., this month swallowed a lower full set of artificial teeth and is not expected to live.—A man at New Haven, Conn., died this month from blood poisoning. He had an inflammation of the face and jaw, and a dentist extracted an ulcerated tooth. The trouble grew worse, however, and when the man died his relatives threatened the dentist with a damage suit. It was proven, however, at the inquest that he was not responsible for the death.

**MARRIED.**—John D. Biggs-Lucy S. Gunn, June 18, Williamston, N. C. J. B. Brashear-Lucy Colson, June 30, Middlesboro, Ky. L. D. Carpenter-Laura Rehkopf, June 25, Indianola, Ia. Frank Corry, June 25, Terre Haute, Ind. P. N. Crittenden-Florence Sawyer, June 12, Addison, Mich. C. W. Dorsey-Lula Wood, July 2, Dayton, O. L. B. Gray-Hortense Bowman, June 25, Stewart, Ia. M. D. Hamisfar-Grace E. Davis, June 21, Warrensburg, Mo. Arthur Lingo-Louise Richoff, July 1, Muscatine, Ia. R. D. Marsh-Adda Burkett, June 18, Dayton, O. R. P. Neil-Della E. Harris, June 26, Calumet, Mich. A. A. Powell-Eva C. Thornbury, June 11, Mattoon, Ill. G. L. Stebbins-Edith B. Montgomery, June 17, Aurora, Ill. C. B. Thompson-Mabelle Jones, June 12, West Pullman, Ill. A. J. Weiss-Jennie B. Henderson, June 18, Minneapolis, Minn. D. B. Wright-Anna P. Detwiler, July 2, Harrisburg, Pa.

**BROKEN APPOINTMENTS NOT PAID FOR.**—A dentist in San Francisco sued a young man to collect a bill for \$80, which included charges for time lost when the patient failed to keep his appointments. The defendant claimed that he was a minor at the time and could be sued only for necessary things.

The judge gave the judgment for \$35 to cover the work actually performed, holding that a minor could not be held liable for broken appointments. We think if the dentist had sued the boy's father or guardian the whole bill could have been collected, as this precedent has been established in many states. Your editor collected a good sized bill against an estate some three years ago, which included several charges for broken appointments. The judge in this court usually cut down claims, but he allowed these charges without question. The sooner dentists impress upon community the fact that their time is valuable the better it would be for the profession.

**KEEPING COOL, WITH SPECIAL REFERENCE TO THE PROPER USE OF WATER.**—Ralph Wait Parsons says that by introducing water in small and frequent quantities either into the stomach or rectum, we can obtain a reduction in the bodily temperature, due to the direct effects of the cooling properties of the water, to reflex action, and to stimulation of the function of the sweat glands. In hot weather, he advocates a dip in water at 60 deg. to 70 deg. F., lasting from one-half to one minute, and followed by a vigorous rub with a coarse bath towel. A shower bath is even better. This cold bath stimulates the heart and nervous system, gives a sense of well-being, gives a healthy glow to the skin, improves the appetite, and rejuvenates the whole organism, giving energy to resist the depressing effects of heat and sultriness. At the close of a hot day, a bath at 103 deg. to 105 deg. F., lasting from three to seven minutes, is cleansing and stimulating, it should be followed by cold water, and after a brisk rub the bather can go to rest, and in the majority of cases enjoy a good night's sleep, although the temperature be very high.—*Med. News.*

**ILLEGAL PRACTITIONERS.**—A dentist at San Bernardino, Cal., was arrested on June 17 for practising dentistry without a license. He admitted that he was not a graduate and had never been in attendance at a college. The jury, however, failed to agree, so he was discharged. June 18 the employe of a dental parlor at Louisville was arrested for practising without a license, but in this case also the jury failed to agree. His employer engaged in a rough and tumble fight with the officer who made the arrest and was fined and sent to jail. A dentist at Baltimore was arrested and pleaded guilty to practising without a license, but as he was competent he was released on condition that he would take the examination and obtain a certificate. A dentist at Liberty, Mo., was arrested June 24 for practising without a license and was fined \$100. We reported last month that a dentist at Kenosha, Wis., was arrested for illegal practice. At the trial he showed a certificate, and now threatens to bring suit for false imprisonment. Another dentist in Kenosha will probably be arrested for practising without a license.

**EXAMINING BOARD AFFAIRS.**—The California State Board of Dental Examiners met at San Francisco in June, and passed 121 out of 125 applicants. The board passed a resolution to the effect that it would not recognize the San Francisco Dental College as a reputable institution. The college has brought a mandamus suit against the board and the matter is now being argued in court.—The Dental Commissioners of Connecticut met May 28 30,

and passed 8 out of 25 candidates. The next examination will be held Nov. 11-13.—The Louisiana State Board of Dental Examiners met at New Orleans May 7 and passed 15 out of 20 applicants. The next examination will be held the second Tuesday in October.—The Minnesota State Board of Dental Examiners met at Minneapolis last month, and passed 45 applicants.—Dr. S. C. Rubey, of Clinton, on June 19, was appointed by the governor a member of the Missouri State Board of Dental Examiners, to succeed Dr. W. W. Birkhead. Dr. Rubey was unanimously endorsed for the appointment by the State Association. Dr. J. R. Megraw of Fayette, was also appointed a member of the Board.—The Montana State Board of Dental Examiners last month examined and passed 15 applicants.—The North Carolina State Board of Dental Examiners met this month and passed 24 out of 26 applicants.—The New York State Board of Regents met at Albany July 2, and the question of the substitution of the degree of D.D.S. for that of M.D.S. was referred to the college committee for a written report at the next meeting of the Regents.

**A STAY OF PROCEEDINGS.**—A lady physician in Denver recently entered proceedings against the surgeon who set her broken leg, because one limb was shorter than the other. A feature of the court proceedings is described by a local "poet," in the following lines:

"Order in the court! Of proceedings grant a stay,  
A picture must be taken and taken right away."  
The lady flushed a rosy red, the jury all turned quick,  
And the kodak man he kodaked 'ere any one could think.

The case it was a lengthy one, and waxed an awful lore;  
The lady took her shoe off and stood upon the floor,  
To show the jury plainly so that every one could see  
That one leg was much shorter than it really ought to be.

The lady had been X-rayed a time or two before.  
The doctors said it wouldn't do, they must be showed some more,  
And then she shed her stockings, and fainted dead away  
When the fiend pressed the button on his kodak yesterday.

The doctors all enjoyed it; the judge and jury smiled,  
The lady may be pardoned if her looks were fierce and wild;  
And doctors, judge and jury hummed an ancient memory—  
"One of his legs was longer than it really ought to be."

—*Med. Standard.*

**POINTING OUT PHYSICAL SIGNS OF INJURIES.**—The second appellate division of the Supreme court of New York holds that there was no error, in the personal injury case of *Perry vs. the Metropolitan Street Railway Company*, in permitting a physician to exhibit the bared body of the party suing to the jury, and to point out thereon physical signs of the injuries alleged to have been sustained. The reason it gives is that such physical exhibition was necessary to a demonstration of the deformity testified to by the physician,

and tended to make the description of the injury more intelligible to the jury. It says further that there is a manifest distinction between an exhibition of a deformed body by way of a more intelligent and satisfactory understanding of the injury (and its effects where the extent and character of the injury are challenged), and the exhibition of a dead and severed part of the body, where the injury is unchallenged, and when the purpose of the show is to prove a matter of minor importance fully capable of proof by evidence which has no tendency to influence or prejudice the jury.—*Jour. A. M. A.*



**DOMESTICATION DIFFICULT.**—Dr. Stickem, "What seems to be the matter with you?" Brannigan, "Sure there's somethin' the matter wid me jaw, for faith, I can't domesticate me food."

**TOBACCO AND ALCOHOL.**—The ill effects of tobacco are not fully experienced, even when smoking is indulged in to excess, unless much alcohol is consumed by the smoker at the same time. That is a well-known fact, but the cause of the peculiarly disagreeable effects sometimes produced by the combination of tobacco and alcohol has never been clearly understood. In a note on the subject in the *Lancet* it is suggested that though, even after a more moderate indulgence in tobacco, no toxic symptoms such as headache and stupor may supervene, yet such would probably be the case if alcoholic drinking were practised at the same time. The powerfully solvent action of alcohol is said to be sufficient explanation of that, since nicotin and pyridin are very easily soluble in alcohol. It is pointed out that the chief poisonous constituent of tobacco smoke is pyridin and not nicotin. The former is a poisonous base not so easily soluble in water as in alcohol, and it is stated

that it can be easily traced in the mouth of an immoderate smoker, especially of the smoker of cigars. "An alcoholic drink is therefore calculated quickly to wash out this poisonous oil and to carry it into the stomach, absorption of the poison ensuing, giving rise to definite toxic symptoms, due not so much to alcohol or pyridin bases alone as to the combined action of both in the manner indicated. Such symptoms would probably be avoided if smokers would abstain from drinking alcohol at the same time that smoking is indulged in. Many a headache or malaise would thus be guarded against."

**ETHER ANESTHESIA.**—Hess attributes vomiting in ether anesthesia to the excretion of ether by the mucous membrane of the stomach, where it acts as a gastric irritant, subsequently causing gastritis. He gives the results of some experiments on animals demonstrating this fact. To prevent the irritant effect of ether on the stomach requires simply the dilution of the ether as it is excreted. A glass of water drunk at the commencement of anesthesia serves to hold in solution considerable ether. Limiting the amount of ether used and the strength of the vapor is always an important factor. This will help to prevent excess of secretion of mucus in the larynx and bronchi, which, when swallowed, adds to the gastric irritability. —*Med. Rec.*

**HEADACHES OF NASAL ORIGIN.**—A Bronner believes that headaches are often due to diseases of the nose and its accessory sinuses. Nasal headache is often of a neuralgic character and is then generally caused by sinus disease. It is generally supraorbital or localized in the middle of the head behind the eyes or at the top of the head. It is usually intermittent, often very severe, and it comes on at certain fixed periods, but is always worse in the morning. A diffuse headache may be due to nasal obstruction or rhinitis. The head symptoms due to sinus disease are not characteristic or confined to any special area. Antrum trouble may cause pain in the cheek or frontal region. Frontal sinus disease causes local pain increased on pressure. It radiates into the head and is often worse over the sinus of the opposite side. The pain is intermittent and worse in the morning. It is increased by any sudden movement. The pain from ethmoidal disease is not typical or severe. It is chiefly confined to the nose and radiates backward. Affections of the anterior ethmoidal cells simulate frontal sinus disease; those of the middle or posterior ethmoidal cells simulate sphenoidal trouble. The latter is generally not diagnosed. There is usually intense pain in the middle of the head behind the eyes. It is intermittent and may be absent for days or weeks. There are frequent attacks of giddiness and the head feels as if it were going to burst. —*Lancet.*

**TO MAKE GOLD COHERE UNDER ALL CONDITIONS.**—When it is advisable to repair an old gold filling without removing the gold already in position, it may be accomplished by following the directions here outlined. (1) Apply the rubber-dam. (2) Clean the tooth carefully with lukewarm water. (3) Wash it with sulfuric ether, to dissolve any fatty or oily substance. (4) Go over the filling with alcohol. (5) Dry with warm air. (6) Carefully anneal a pellet of No. 4 gold. (7) With a very fine pointed plugger go over the entire surface of the gold, put on, first with hand pressure, then mallet it

well. (8) After that go over it with a convex plugger. (9) The direction of the force should be at right angles to the surface worked upon. (10) If you have followed these directions in applying two layers, you can go ahead in the usual manner and use either pellets or leaf gold. Having tested it in various positions, I find it entirely satisfactory except where the filling is subject to great stress, when it is ill-advised.—X. Dodel in *Ohio Dent. Jour.*

**NERVOCIDINE: A NEW LOCAL ANESTHETIC.**—Nervocidine is the active principle of an Indian plant called gasu-basu. It is a yellow, amorphous, hygroscopic powder, easily soluble in water, less soluble in ether and alcohol. Its aqueous solution froths when shaken and gives all the reaction of an alkaloid. It has been tried as a local anesthetic and has been found to possess very strong anesthetic properties. Its action is very prolonged; for instance, the effect of a one-half or even one-fifth per cent solution may last for two or three days. It has, however, some drawbacks, such as the local irritation to which it gives rise, the slow production of the anesthetic state (from ten to twenty minutes being required), and strong toxic by-effects: nausea, salivation, vomiting, etc. So far its use has been restricted to dentistry, especially as a substitute for arsenious acid in the treatment of painful pulpitis.—*Lancet.*

**GRAY HAIR AND EMOTIONAL STATES.**—Jones reports a well-authenticated instance of a patient, a man, 53 years of age, whose hair and beard, during a period of five weeks, changed from a flecking of gray to an absolutely pure white. The author has investigated the color of hair of 2,393 insane persons—1,400 females and 993 males—in the Claybury asylum, and also attempted a comparison of the color of hair with temperament and disposition of the patients. He found the hair in the maximum number of men dark-brown, and not brown as in Galton's table, whereas the women corresponded with the table, and a higher percentage of women than of men had light-brown and red hair, as also gray and very gray hair (not in Galton's table), but there was a greatly preponderating number of bald-headed and very bald-headed persons among the men. This seems to indicate a more marked loss of self-control among fair females than among males, but a greater proportion of baldness (as among the sane) in men than in women. He took a further record of the color of the hair among those who attended the entertainments and dances, and compared this record with that obtained among those who attended Divine service. A preponderance of very fair and brown-haired women attended the dances rather than church or chapel services, these latter being of the darker, more sober, or atrabilious temperament, and this was also true of the men. In both sexes it was noticed that gray-haired persons attended services in preference to entertainments—the passive attitude of religious ministration being more appreciated by the old, whereas active indulgence in pleasurable pursuits prevailed among the young. The author finally discusses the influence of nervous changes upon the hair and is inclined to the view that there is a close physiological connection between the cerebrospinal axis and the skin. Probably the nervous system has a dominating control over the pigmentary system.

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